

# PC & TECH AUTHORITY

TECH ADVICE YOU CAN TRUST

EXTRA PAGES 16

APPLE'S  
BEST  
iMAC  
YET!



GOOGLE, APPLE,  
OR MICROSOFT?  
CAN YOU MIX AND MATCH  
HARDWARE & APPS?



PROTECT YOUR DATA & DEVICES

# THE SECURITY ISSUE

- GROUP TEST: 16 SECURITY SUITES PUT THROUGH THEIR PACES
- CAN YOU ERASE YOUR ONLINE HISTORY? WE FOUND OUT
- MOBILE SECURITY: BEST APPS TO KEEP YOUR DEVICES SECURE
- WHY A SINGLE PASSWORD IS THE BEST SOLUTION
- USING FREE TOOLS TO RECOVER LOST DATA

FREE DVD  
INSIDE

ASHAMPOO  
**MAGICAL DEFRAG 3!**  
KEEPS YOUR PC IN TUNE, IN STYLE!

**PLUS LINUX MINT OS**

**DEMOS**  
IRON SKY: INVASION  
& STREETFIGHTER  
VS MEGAMAN



THE BEST BACK-  
TO-SCHOOL  
GADGETS



2013's BIGGEST  
HITS & MISSES

**GAMING**

WHY MULTI-PLATFORM  
DEVELOPMENT IS HARDER  
THAN YOU THINK.

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CRY, CRYISIS 3,  
AND FUZE



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ISSUE 184 MARCH 2013





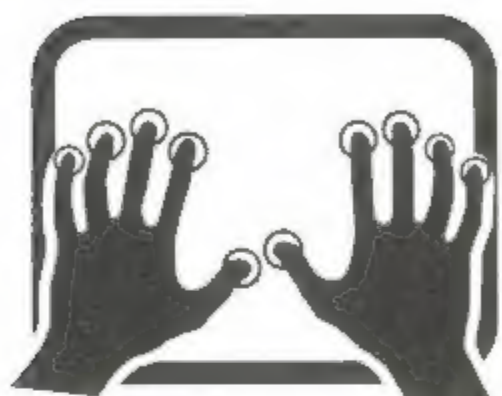
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Windows 8



## Tech advice you can trust!

- Our tests are performed by experienced reviewers in our Labs under the supervision of Editor John Gillooly
- Our brand new benchmarks have been tailor-made to reflect real-world computing needs
- We put tech through its paces – seriously. From processing power to battery life, from usability to screen brightness, our tests are exhaustive
- We will always offer an honest and unbiased opinion for every review



# SECURE

**C**omplacency is often the first port of call when it comes to keeping your PC secure, and odds are that you have been, or known, one of those people who assert they know enough about computing to be naturally inoculated to viruses and password hacking. It is an attitude that lasts right up until you get hacked or infected, which is inevitable.

We've seen this month with our antivirus group test that some packages struggle to indentify new threats. When even the professionals can't keep up, how can a smug attitude and supposedly bulletproof computing skills compete?

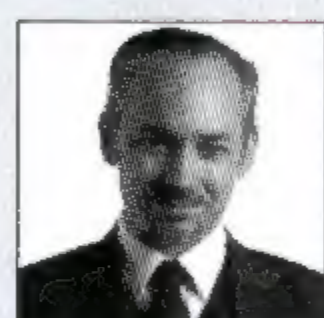
The same goes for password security, which is why you should read our guide to password managers this month. They may seem daunting, but thanks to cross-platform capabilities and cloud functionality they are now the safest way to secure the myriad logins in your life.

Besides our big focus on security this issue, we have also taken time to look at the product ecosystems from Apple, Google and Microsoft, and whether you are better off going all-in with one brand, or mixing and matching your products based on what is best in class. The answer is quite surprising, and really highlights the various strengths and weaknesses of what the big three companies do to lock you into their products and services.

**John Gillooly**

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## THE TEAM...



**Managing Editor**  
David Hollingworth

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T @atomicmpc

I was gearing up for a big year of next-gen console action, but after CES I think I'll be sticking with my PC.



**Video Producer**  
Josh Lundberg

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T @MrJosh86

After recently being corrected by John Carmack on Twitter, I'm busy worrying that it is all downhill from here.

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Also, don't forget to check out the iPad version, packed with exclusive interactive content complementing the regular magazine. Here's a sample of what you can expect:

► **Video:** Get video tutorials, game trailers and more

► **Image Galleries:** Get a better look at some of the products reviewed

► **360 View:** Get up close with tech from every angle.

► **Get the app:** PC & Tech Authority for iPad <http://tinyurl.com/IPADPCTA>



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# INBOX

IF YOU HAVE A STORY OR  
POINT TO MAKE, SEND IT IN!  
TELL US YOUR ANECDOTES,  
OPINION & TALES OF WOE



## LETTER OF THE MONTH

I'm a long term subscriber to the print edition of *PC&TA*, something I intend to keep doing for as long as I have eyes. Electronic download offers haven't distracted me; there's a lot to be said for a magazine that's actually a magazine. Consider the advantages: the print edition is infinitely portable, it doesn't run flat when least expected, it doesn't have to be put in flight mode and turned off for takeoff or landing, push-mode mailbox delivery works perfectly, and colours are reproduced perfectly on my reading device. Plus the bundled DVD takes up no hard drive space and doesn't deplete my monthly download quota.

So here's the question: just suppose that someone in my household wants to read *PC&TA* on my Pad? I mean, that would never be me because I'm welded to the print copy, but... just suppose... is it possible that my print subscription could include Pad access as well? Does it already? I've hunted carefully for a hint of how I might get online access with my print subscription, and I'm sure that it's somewhere in the mag, but... well, it's escaped me. I'll take solace from the certainty that the information I seek really is there, just obscured by standout editorial content!

**J. Maizels**

**John Gillooly says:** Well, funny you should ask. We currently treat a subscription to the print edition

## Getting in touch

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com.au

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inbox@pcand  
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Please limit letters  
to 200 words, where  
possible. Letters may be  
edited for style and to a  
more suitable length.

as separate to the digital editions – but we're hoping to change that shortly. Keep an eye out in an upcoming issue for how to get both the hardcopy you love, and an added digital bonus.

## MORE DVD BLUES

Sorry if this email is at a lower standard than most others; I am writing it on my Nexus 7. The same tablet I purchase and read *PC&TA* on – and stumbled upon the other side of the DVD decision. Everyone is talking about yay or nay on DVDs for the physical magazine, but what about us 'digital warriors'? Why not use the best of both worlds by sending out the DVD with physical copies and provide downloads for those of us who have lost the DVD or never got it in the first place? It would be safer than navigating all of the (real and fake) sites popping up everywhere for people who do not know how to recognise authentic downloads.

**C. Bishop**

**John Gillooly says:** Well, we do actually have a download section on our website currently, with far more software than we can fit on our monthly DVD!

## DVD: YAY OR NAY?

In your February 2013 issue review of Office 2013 you neglected to mention that Outlook 2013 has dropped support for Exchange Server 2003. This is what I like to call a valid reason not to upgrade.

**C. Bishop**

**John Gillooly says:** Thanks for letting us know.



## LETTER OF THE MONTH

This month's letter of the month will receive the STM HOOD laptop backpack thanks to the guys at STM.  
[www.stmbags.com](http://www.stmbags.com)

## TOP SITE COMMENTS

All good. Hell, I wish all my pcb prototypes worked first time, and I spend AGES on them.

**Overture being very understanding of the odd typo Web ID: 329620**

The console/mobile gaming space is not the space that really matters re The Wintel matrix hehe. The gaming space for PC gaming, well that is an excellent point of entry for a paradigm shift in OS user base.

I would also like to see ubiquitous support for Apple Mac by game developers – competition is good.

**Waltish on Valve's Linux efforts Web ID: 3296265**

Win 8 has many keyboard shortcuts that make using the keyboard and mouse a lot easier. I discovered today in the 'Modern UI' that you can use the scroll button on your mouse to move the tiles across. I think Microsoft didn't think this through carefully. If you have a touch device, you'll love the 'Modern UI' and hate the 'Desktop UI' (everything's too small). If you have a desktop system or plugged in laptop, you'll prefer the 'Desktop UI'. But you'll wish everything you are used to in WinXP, Vista, or Win7 would work a bit better in Win8.

**BunyipBoy on Windows 8 woes Web ID: 328860**

One of the smartest ideas in ages. Anything that keeps plastics out of ecosystems is tops with me.

**BunyipBoy Web ID: 328844**

**Want to read more? Head to [www.pcandtechauthority.com.au](http://www.pcandtechauthority.com.au) and search for the Web ID to see the full story**



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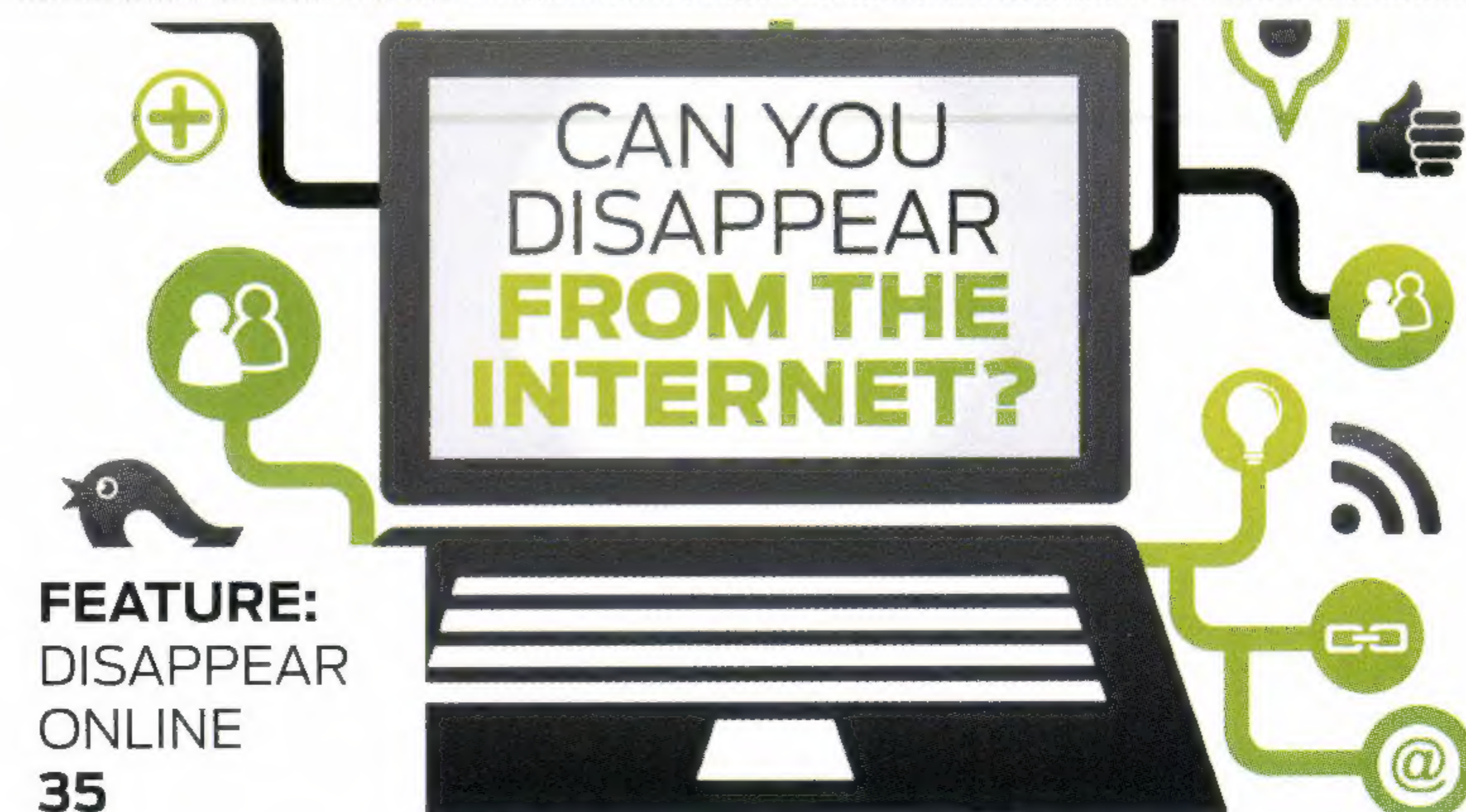
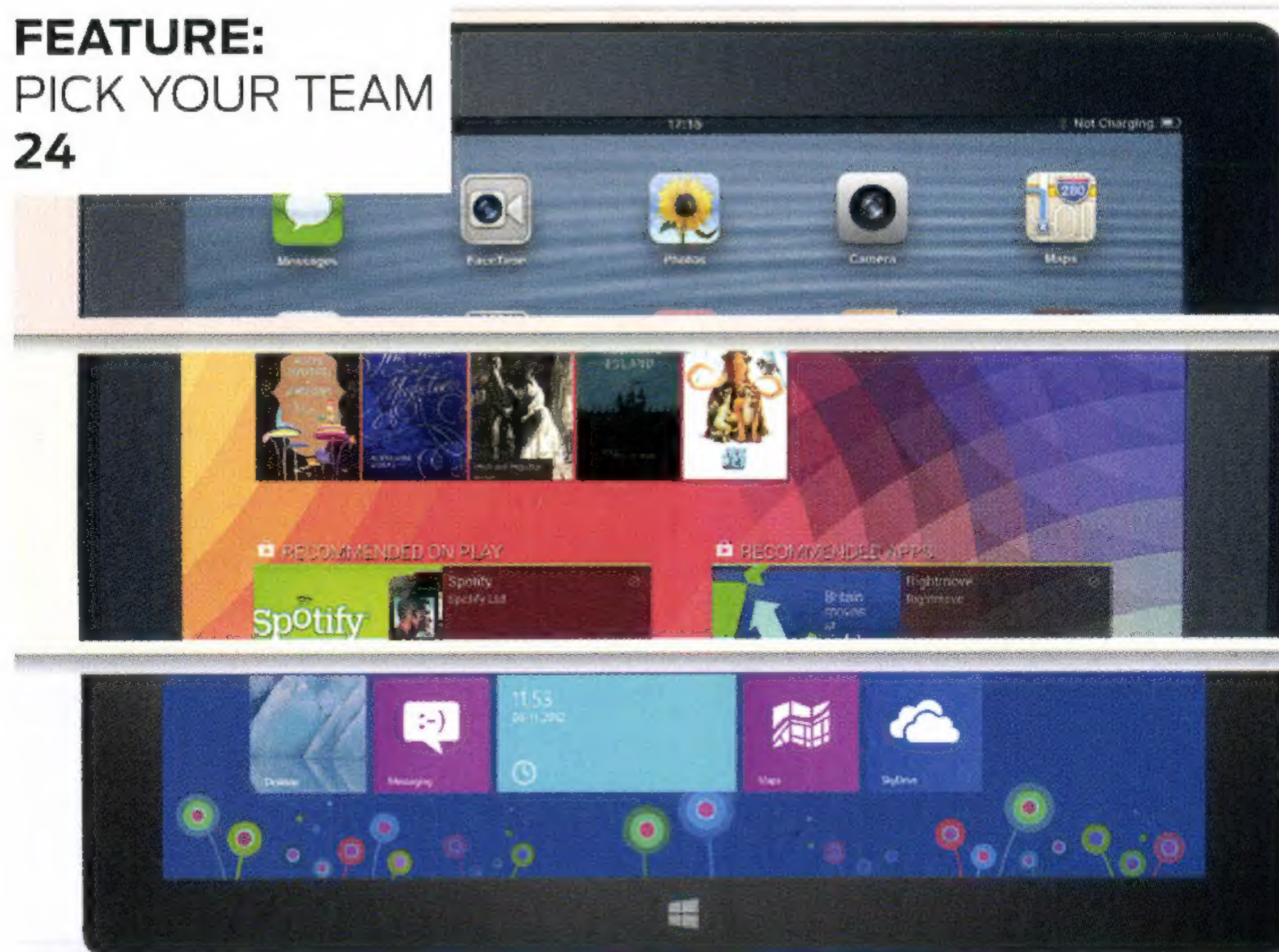
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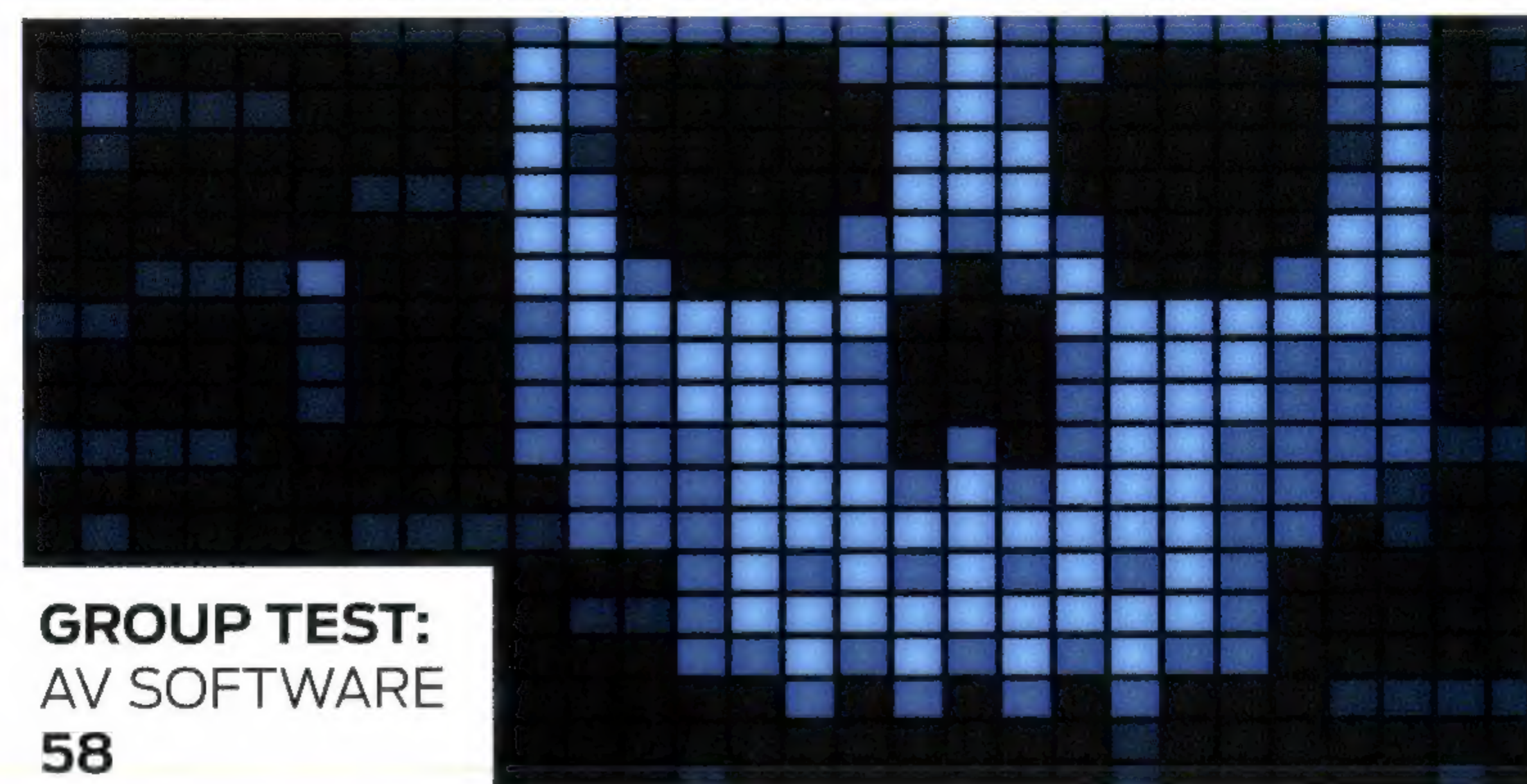
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# TECH NEWS

LATEST TRENDS AND PRODUCTS IN THE WORLD OF TECHNOLOGY

## ROBERT JORDAN'S A MEMORY OF LIGHT AND THE EBOOK DEBATE

DO PUBLISHERS AND AUTHORS NEED TO CATCH UP WITH HOW REAL PEOPLE CONSUME MEDIA THESE DAYS?

**T**here's bit of storm brewing in the world of fantasy fandom at the moment, but it has a lot of bearing on the way paper-based media is undergoing a shift in consumption methods.

This week, *A Memory of Light*, the latest and final book in an ongoing and well-loved fantasy series, *The Wheel of Time* (uncompleted by Robert Jordan before his death, and finished by fantasy writer Brandon Sanderson), was released to hordes of clamouring fans. It is the fourteenth book in the series that was first published in 1990; many fans of the series have literally grown up reading the story.

What's also interesting is that many fans have evolved the way they consume media in that time, moving from hard copy to digital consumption. The rise of eBooks, powerful but simple eReaders, and technologies like ubiquitous smartphones and tablets make it very easy to do away with print entirely - and that's just what many readers have done. Fans of doorstop-sized fantasy novels are even fonder of the shift to digital format, given the size of the average first-release trade paperback.

However, there's a fly in the ointment for Jordan fans - *A Memory of Light*, like the last book in the series, 2010's *Towers of Midnight*, will not see an eBook release for four months.

The book's final publisher, Tor Books, had this to say on Twitter (<http://tinyurl.com/arv3xcw>) about the delay. "The ebook is delayed at the request of Harriet McDougal, Jordan's editor and widow. We respect her wishes in this."

The book's final author, however, was more forthcoming on the reasoning (<http://tinyurl.com/afjy9dg>):

*This is not my decision or Tor's decision, but Harriet's. She is uncomfortable with ebooks. Specifically, she worries about ebooks cutting into the hardcover sales. It*

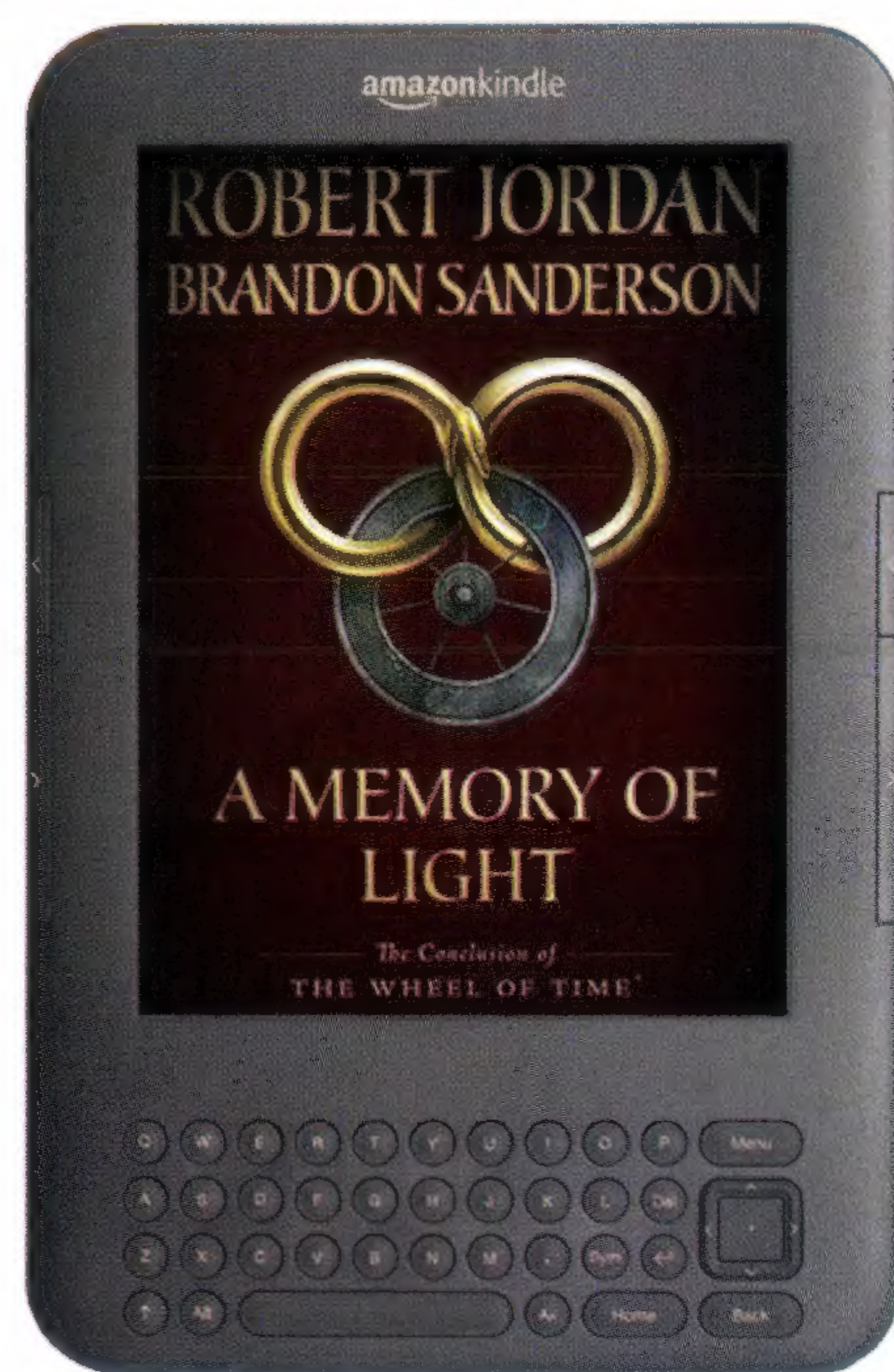
*isn't about money for her, as the monetary difference between the two is negligible here. It is about a worry that her husband's legacy will be undermined if sales are split between ebooks and hardcovers, preventing the last book of *The Wheel of Time* from hitting number one on either list. (Many of the bestseller lists are still handling ebooks in somewhat awkward ways.)*

*As the last books have all hit number one, she doesn't want to risk one of these not hitting number one, and therefore ending the series on a down note. (Even though each *Wheel of Time* book has sold more than its predecessor, including the ones I have worked on.) I personally feel her worries are unfounded, and have explained that to her, but it is not my choice and I respect her reasoning for the decision. She is just trying to safeguard Robert Jordan's legacy, and feels this is a very important way she needs to do so. After talking about the issue, we were able to move the ebook up from the originally planned one-year delay to instead come out this Spring.*

So, basically, things could have been worse. It is cold comfort to many long-running fans of the series, though, and many are looking at other ways to find the book - in a digital format - before it's officially released.

**"The issue really seems to be that the industry at large needs to come to terms with change."**

It seems fair for a publisher, or even an author, to want to attain best seller status. It is, after all, often a guarantee of even more success, and for a long running series that has seen every book hit the



top, it makes sense not to want to see one book miss out on the accolades. The issue really seems to be that the industry at large needs to come to terms with the changes taking place in publishing; after all, whether a book is being read on an iPad, an eReader, or in print, it's still being read, and still represents a sale.

It could in fact be argued that short-sightedness such as this is actively harming publishing; there are many publishers yet to fully embrace digital distribution, and if they are afraid of it diminishing best seller status, and thus risking sales, it seems an odd form of putting the cart before the horse. If the current practice of delaying eBook releases is in fact driving digital consumers to look for pirated copies of books, that's just as damaging - more than one Jordan fan has most likely made this book their first 'illegal' download, so they can enjoy it on an e-reader.



# KOGAN LAUNCHES CUT-PRICE PHABLET

THE LATEST ENTRY TO THE INCREASINGLY-CROWDED PHABLET SEGMENT HAS AN UNBEATABLE PRICETAG OF ONLY \$149.

**K**ogan is shaking things up in the mobile space once again with its new Agora smartphone. Just announced last month at CES, it raises the bar on budget smartphones with its extra-large 5in display, 1GHz dual-core Cortex A9 processor, dual-SIM support and a 5-megapixel camera.

The best part? Kogan is selling it direct from its website for just \$149.

Ruslan Kogan, never one to be shy about goading his competitors, said, "The big brands are going to need a new nappy when they see what we've been able to cram into a phone for under \$150."

The Kogan founder and CEO also had an interesting take on the Agora Phone's value proposition. "\$149 can get you 22% of an iPhone 4S, 23% of a Samsung Galaxy Note, or 100% of a Kogan Agora."

The Agora Phone uses the same dual-core Cortex A9 processor found on the original Samsung Galaxy Note, albeit clocked at a

slower frequency (the newer Galaxy Note 2 has a quad-core processor), supported by 1GB of RAM. There's 4GB of storage on-board, and a microSD expansion slot for adding up to 32GB more storage. It will run Ice Cream Sandwich (Android 4.0) out of the box, but there is no word yet as to whether an upgrade to Jelly Bean (Android 4.1 or 4.2) is on the cards.

Perhaps its biggest drawback is its 480 x 800 pixel resolution. Blown up to a 5in display, this results in a fairly low pixel density of 186ppi. In practice, this means text will look grainy and images won't look as sharp as they do on other smartphone displays.

Like many other dual-SIM phones, only one of the slots supports 7.2Mbps HSDPA - the other slot is 2G only. It has a 2000mAh battery, and talk-time and standby times are 4.8 hours and 400 hours respectively.

The expected ship date is 26 February.



## ADOBE'S END-OF-LIFE SOFTWARE OFFER LEADS TO FREE CREATIVE SUITE 2 FOR ALL!

ADOBE'S BEING A LITTLE QUIET ABOUT ITS CURIOUS EFFORTS TO KEEP SUPPORTING CS2 USERS, BUT FOR NOW, IT LOOKS LIKE IT MEANS THE OLD VERSION OF CREATIVE SUITE IS EFFECTIVELY FREWARE...

It seems that Adobe may not have been thinking its recent efforts to help out users of recently End-of-life-ed Creative Suite 2 all the way through.

As of December 13 last year, the software company disabled the activation server for the now seven-year-old suite of products. To help users caught out by the de-activation, Adobe hosted a download site (<http://tinyurl.com/b7nvlmw>) for the whole CS2 suite, along with serial keys, for the suite as a whole, and individual applications.

It's been thought by a lot of users and web commentators that Adobe is being all nice, and just giving stuff away, but this is not in fact the case.

"... to ensure that any customers activating those old versions can continue to use their software, we issued a serial number directly to those customers," Adobe said in a statement. "While this might be interpreted as

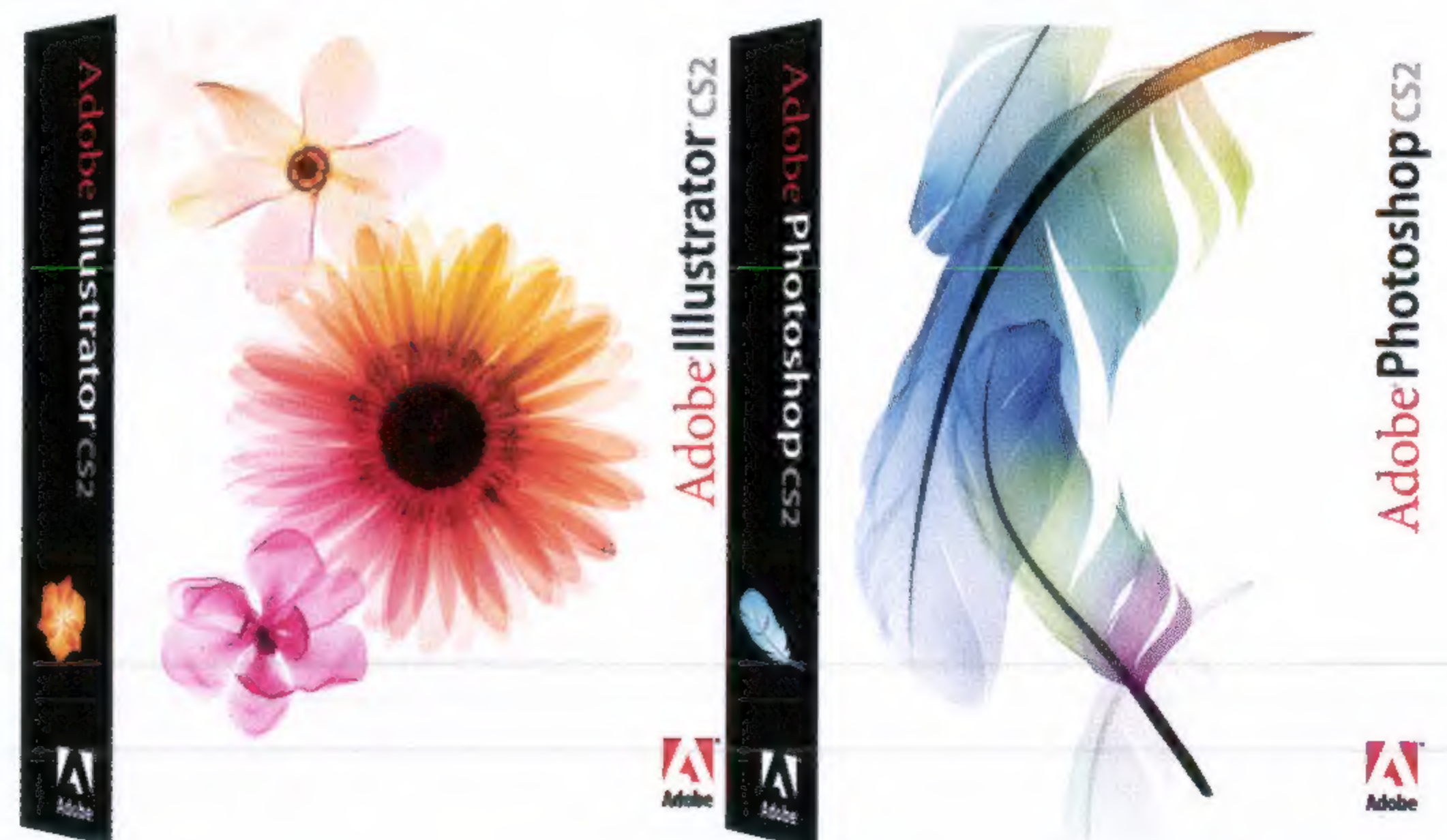
Adobe giving away software for free, we did it to help our customers."

There is one important line in the instructions here that someone seems to have forgotten to implement: "Sign in using your Adobe ID and download your application." It just so happens, however, that anyone can download the executables, and the serial keys are all just listed there for the taking.

It does seem generous, but it's worth pointing out that the now relatively ancient software is a bit long in the tooth. The Mac

versions of the suite, for instance, will only run on a PowerPC processor.

Nonetheless, this is likely too good an opportunity for many to pass up. If you want to get Adobe software on multiple systems for less, this is a good option.





PUBLIC or PRIVATE?

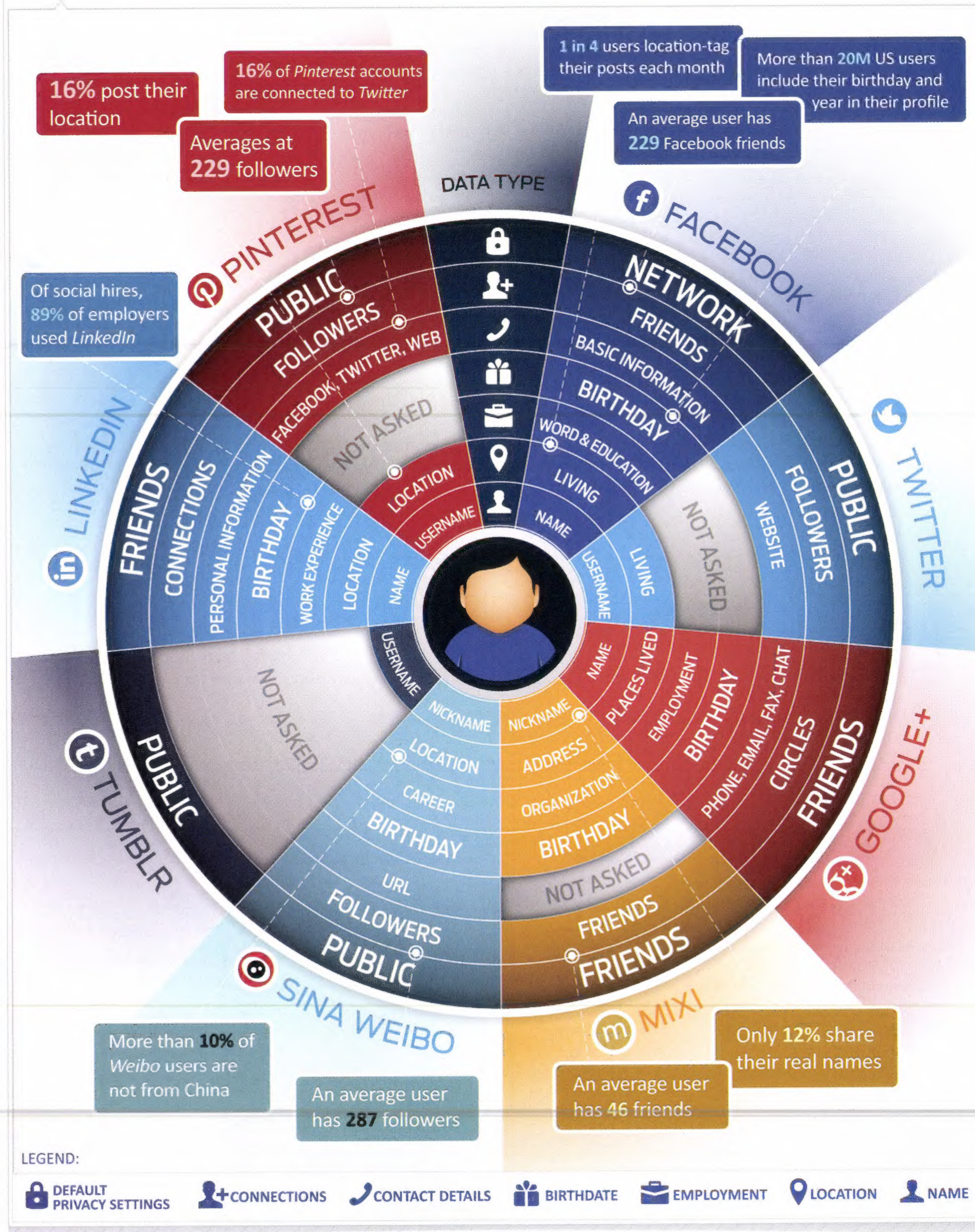
# The Risks of Posting in Social Networks

You have the right to remain private. Anything you post can and will be used against you.

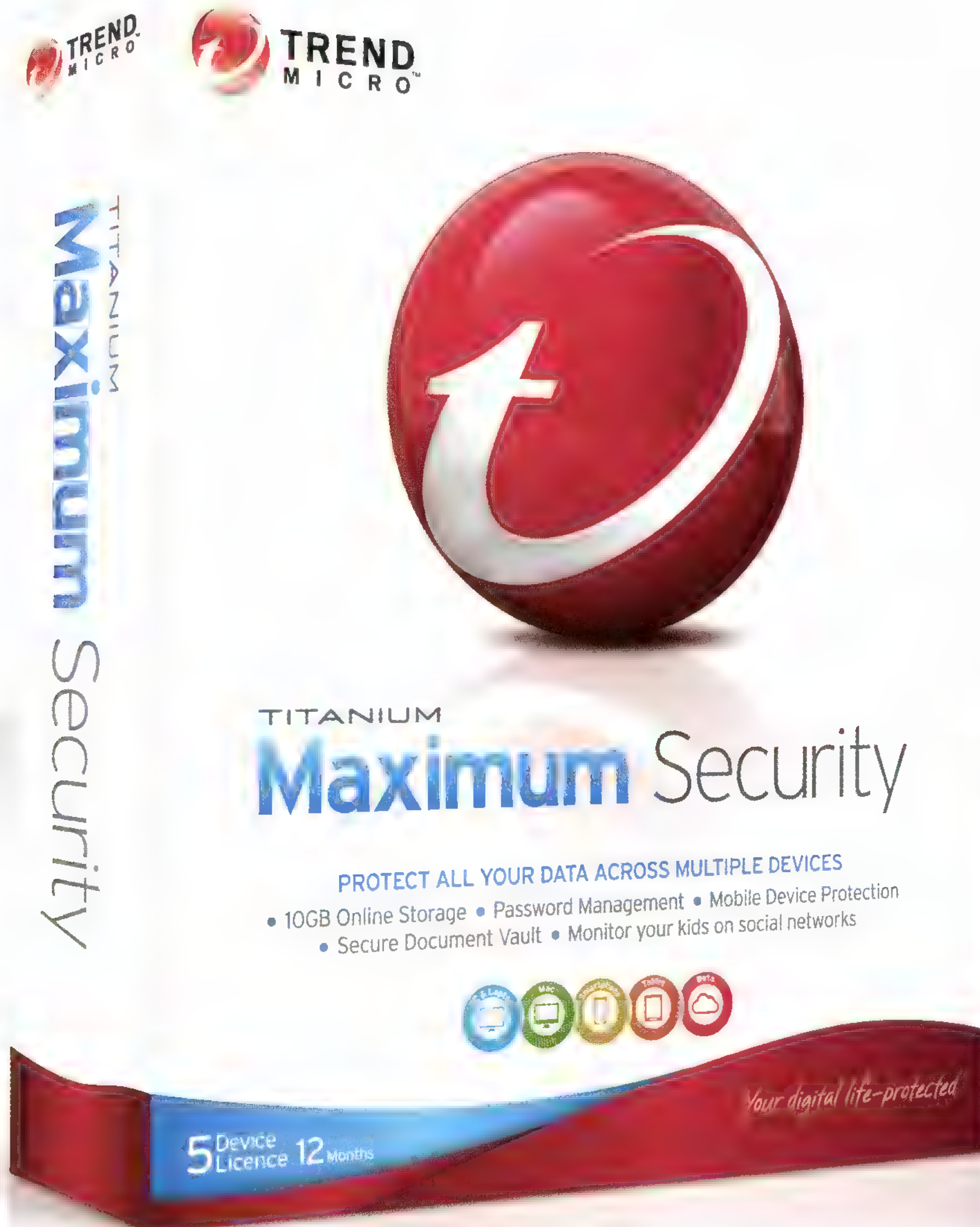


## TMI: Too Much Information Online?

What information can you post in your favorite social networks?







Your all - in - one security solution with  
market leading social network protection

Protect up to 5 devices – Windows PCs, Mac computers,  
Android tablets or Android wv.

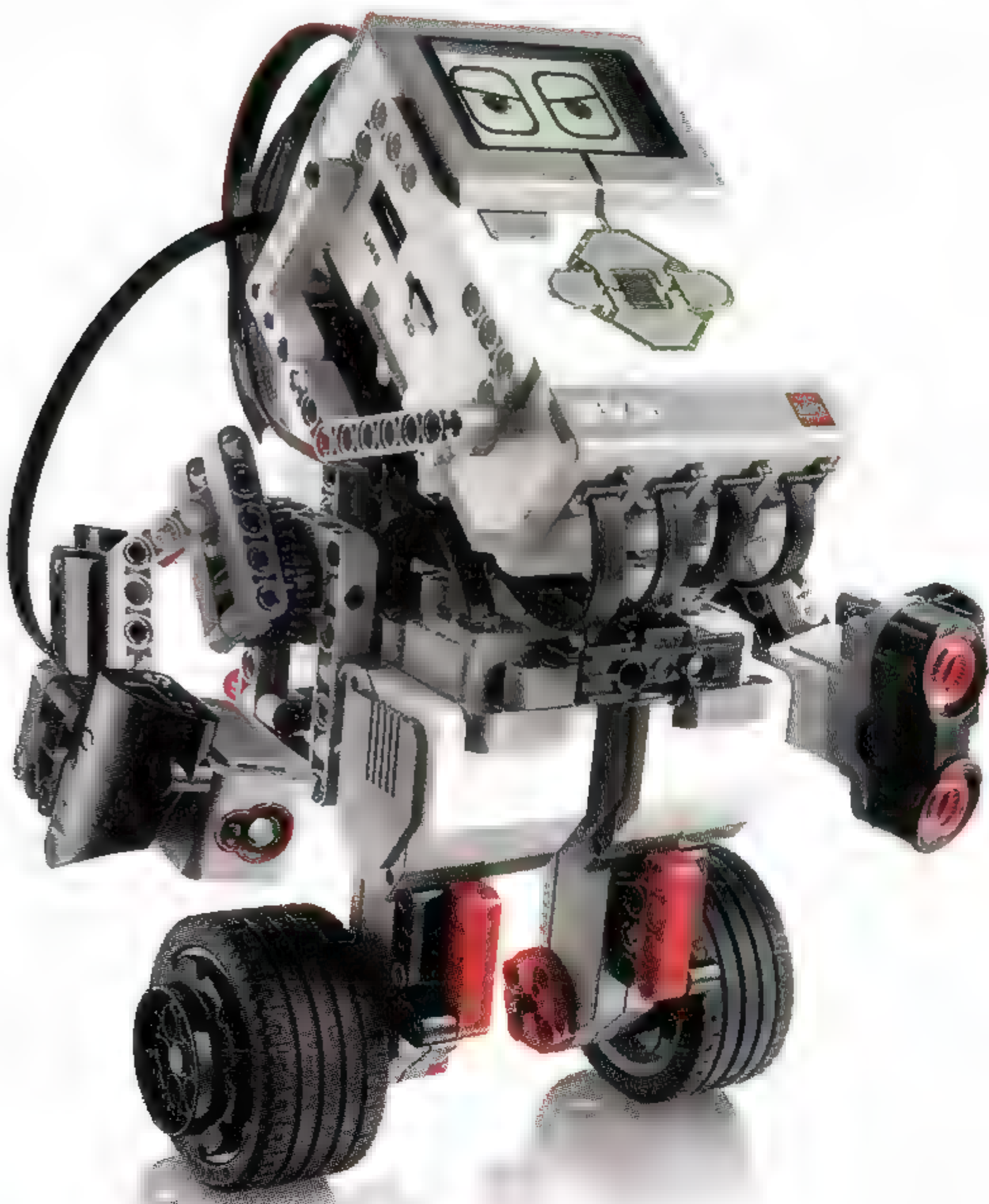


*Your digital life-protected*



# MOST WANTED

THE NEWEST HOTTEST PRODUCTS FROM THE CONSUMER ELECTRONICS SHOW!



## ▲ LEGO MINDSTORMS EV3

Lego's robotics system has received an update that makes it compatible with iOS and Android phones. There's a new version of the intelligent controller brick with an ARM9 processor, 64MB of RAM and an SD card slot to expand the 16MB of flash storage. There's also a new app for building instructions that lets you view them in 3D, rotating and zooming around to make the whole process of putting your robotic creations together a lot more user-friendly. The EV3 gear will be available in the second half of 2013.

[Minestorms.lego.com](http://Minestorms.lego.com)

## ▼ PANASONIC RP-BTGS10 HEADPHONES

Using bone conduction, the Panasonic RP-BTGS10 headphones rest just outside your ears on the temple. Vibrations transmit the music through your bones, straight to your auditory nerve.

The headphones (bonephones?) are intended for the responsible jogger, allowing him to hear their surroundings at the same time as the music. With their ears unblocked, they can listen out for oncoming trucks, without having to pause their fave running tunes.

The Bluetooth skull-shakers use a single AAA battery, and include a bone conducting microphone, so your skeleton can have conversations on the phone. The headphones will be released this autumn in a variety of colours, with pricing yet to be announced.

[www.panasonic.com](http://www.panasonic.com)



## ◀ LG 55IN CURVED OLED TV

It may sound like bit of a gimmick, but the subtle five degree curve in LG's new range of OLED televisions really does make a difference, in a couple of ways.

First up, it helps make the TV seem less out of place set away in a corner, but more importantly, it also produces a more immersive viewing experience. Five degrees doesn't like much, but it really does wrap the action on screen around the viewer. While LG says this is great for 3D viewing, we think the new OLED TV would also make a great gaming television - whether plugged into a console, or even a PC to take to advantage of Steam's Big Picture mode.

Curved shenanigans aside, LG's new Four Colour Pixel system, with an extra white sub-pixel, delivers excellent image quality.

[www.lg.com](http://www.lg.com)







## ▲ PARROT AR DRONE 2.0

We've played with the previous version of the Parrot AR drone, and it was an absolute blast - even if it did have a bit of a learning curve to overcome in getting it under proper control. The new Drone 2.0 takes everything that made the original model great, and basically turns it up to 11.

The built-in camera is now HD capable, making your in-flight videos better than ever before. And there's a tonne of other new features to make this the ultimate in flying cameras (because there's just so many of those on the market, right?!). Director Mode lets you pre-program flight patterns to get just the shots you want, without jittery human interference. There's also an onboard flight recorder, that can track GPS information and HD video. Plus the new high density battery deliver 50 per cent more power.

And it's still easy to control from your phone or tablet. Awesome.

<http://ardrone2.parrot.com>



## ▲ SONY 55IN XBR-55X900A

This year manufacturers have been less shouty about 3D and the new big trend is bumping up the resolution. 4K or Ultra HD TVs with a resolution of four times 1080p (over 4,000 pixels across - hence 4K) are where it's at. Previously more of a future concept than a realistic addition to your home, manufacturers including Sony has now shown off the first 4K sets that will actually fit in your lounge.

As cutting edge TV tech goes, Sony's 55in XBR-55X900A is expected to be at the more 'affordable' end of the spectrum when it launches this summer. We've seen it in use and it really is a sight to behold, plus its large, exposed speakers promise to bring better sound than the insipid offerings from most flat screen TVs. 4K-mastered Blu-ray discs and 4K on demand content are starting to appear too, so you'll actually have something to watch on your shiny new high-res beast.

[www.sony.com.au](http://www.sony.com.au)

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# MOST WANTED

OUR GUIDE TO THE BEST GEAR TO GET YOUR SCHOOL YEAR STARTED RIGHT!

## ▼ APPLE IPAD

It seems a bit of a cliché to call out an iPad as an education device these days, when entire schools are starting to roll them out to students. But it remains to be said: the modern tablet is just such a handy device inside the classroom, and in our experience Apple still has the edge in sheer usability and performance.

[www.apple.com/au](http://www.apple.com/au)



## ▼ STM TRACER STYLUS DELUXE

The pen truly is mightier than the sword - at least when it comes to handy note-taking and scribbling down ideas. However, this pen is even mightier still.

The Stylus Deluxe has both a red and black pen, available with a twist of the pen's barrel, and a capacitive touch stylus on the other end, for virtual scribbles or sketching. This handy little nub can also be removed, to reveal mini-screwdriver heads and a handy sim-remover tool. It's the ultimate small gadget accessory.

[www.stmbags.com](http://www.stmbags.com)

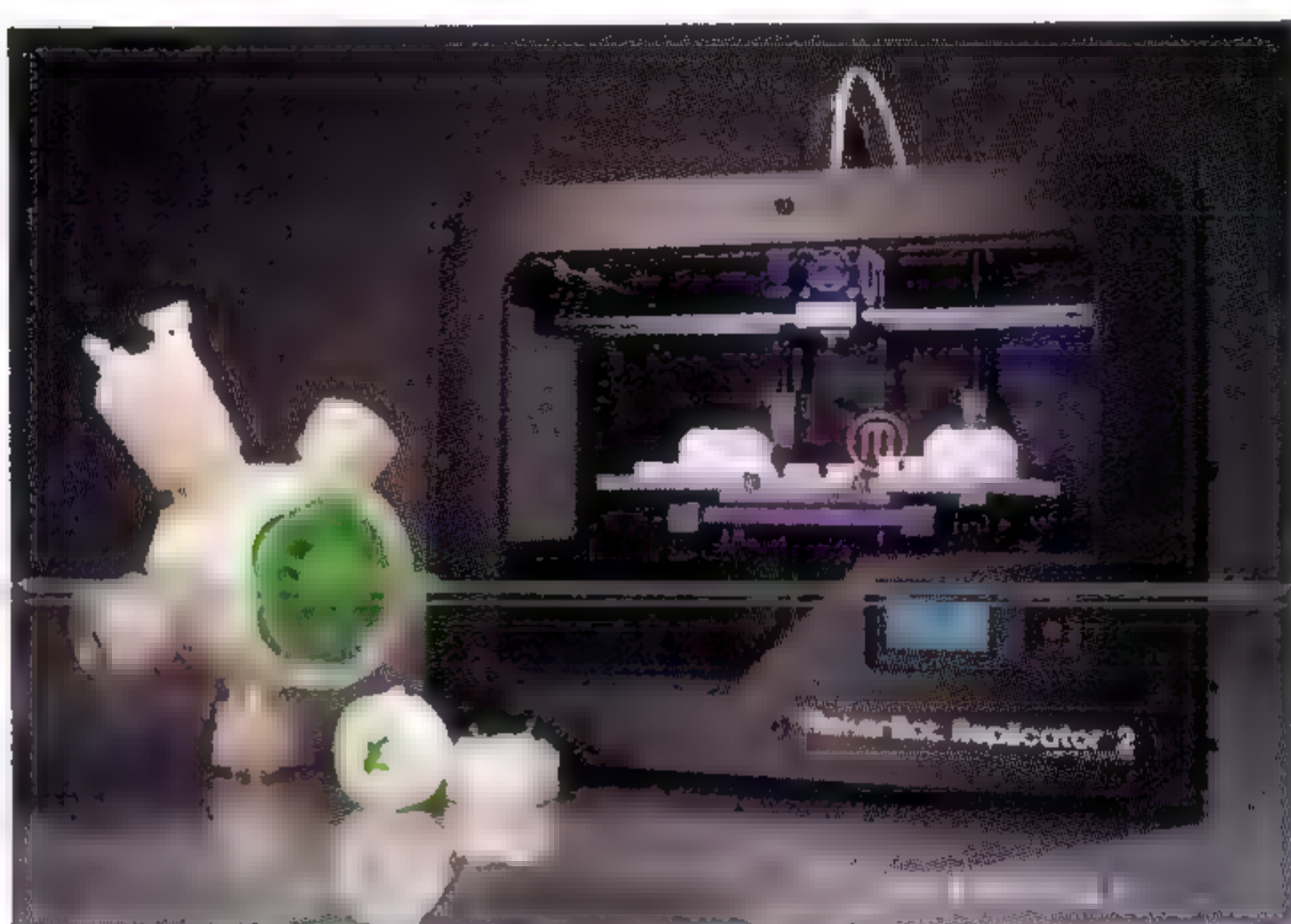


## ▲ STM IMPULSE

A good bag has always been important for good schooling, no matter what stage your education is at. However, with the growing encroachment of digital technologies and devices into education, a good bag is not only good for you (and your back!), but also important for keeping your tech safe and sound.

The Impulse can fit the majority of 15in laptops (not to mention far smaller tablets), and features a veritable cornucopia of compartments for notes, textbooks and more, both inside and out.

[www.stmbags.com.au](http://www.stmbags.com.au)



## ◀ MAKERBOT REPLICATOR 2

Okay, this may not be the most essential study aid, but really, imagine the look on any teacher's face when all your assignments and projects are accompanied by 3D props! Though, seriously, if you're doing anything involved in physical sciences or engineering, we can imagine a mess of uses for one of these.

The Replicator 2 (gotta love a good Star Trek reference) is a fourth generation 3D printer, capable of creating objects down to 100 micron thickness, and has a maximum volume of 410 cubic inches.

[store.makerbot.com](http://store.makerbot.com)





## ◀ ASUS ALL-IN-ONE

ASUS' range of all-in-one PCs is perfect for a variety of computing needs, but for education, they're near perfect. Whether you're aiming for a system for your children to complete homework on, or are a student yourself and living in a somewhat... spatially-challenged style, the slim form factor of ASUS ET2220 range is bang on. All-in-one systems, like this one, with touch capability, are also perfect compliments to Windows 8.

And here's a handy hint for parents looking for a pure study machine: the \$999 model is powerful enough for study, but has only integrated graphics. No one's going to want to game on a machine like this!

[www.asus.com.au](http://www.asus.com.au)



## ▲ LOGITECH KEYBOARD FOLIO

If you're going to invest in shiny new tech, it's a good idea to also invest in some measure of protection for it. Sure, you can have a neat bag, like the Impulse, but tablet protection can go a bit further, offering not only durability, but added features.

Logitech's Keyboard Folio is a perfect case in point.

This folio adds a cover to your iPad that features a soft rubber keyboard, making traditional typing on your tablet easier than ever.

[www.logitech.com](http://www.logitech.com)

## ▼ VIPER ERGONOMIC MESH OFFICE CHAIR

Unless you're studying to become a personal trainer (and, frankly, even then), you're going to spend a lot of time sitting squarely on your educated behind. That being the case, you may as well make sure that said behind (and the back above it) is as pampered as possible.

The Viper is a great way to get the job done, offering adjustable arm rests, back and seat height adjustment, tilt angle adjustment, and... well, a lot of adjustment. With a heavy base, and mesh material, it's a sturdy chair that should see you right through whatever you're studying. Keep an eye on Milan Direct's sales, too, as you can save nearly a hundred bucks off the chair's RRP of \$459 if you time things right.

[www.milandirect.com](http://www.milandirect.com)



## ▼ LIVESCRIBE

No matter how digital our lives get, sometimes the simple method of putting pen to actual paper is still more reliable than anything else. But that doesn't mean you can't bring a lot more functionality to the process.

Livescribe does just that, but combines specially printed notepaper with a pen that can track and record all its movements - as you scribble or write, the pen can remember your notes, and even transmit them to Evernote on other devices. What's more, the pen features a built-in microphone, allowing you to record lectures as well as the notes (or bored doodles) you're taking on them.

[www.livescribe.com](http://www.livescribe.com)





# GAMING NEWS

ALL THE NEWS THAT'S FIT TO PRINT FROM THE GAMING WORLD

## NINJA GAIDEN 3: RAZOR'S EDGE IS AUSTRALIA'S FIRST R18 GAME

THE FIRST GAME TO GET THE R18 NOD IS A BLOODY FIGHTING GAME. AND NO, WE'RE NOT SWEARING

So, there you have it – it's taken less than a fortnight for Australia to get its first R18 rated game. The Australian Classification Board announced today that *Ninja Gaiden 3: Razor's Edge*, has passed classification (<http://tinyurl.com/aq9zwrp>), and earned the new adults only rating.

"Under Guidelines for the Classification of Computer Games, R 18+ computer games will have a high impact and it is for this reason that these games are not suitable

for under 18s," said Lesley O'Brien, the Board's Director, in today's release.

"*Ninja Gaiden 3: Razor's Edge* contains violence that is high in impact because of its frequency, high definition graphics, and emphasis on blood effects."

Interestingly, the game is an updated version of a title released last year, and rated MA15+. This time around, it includes a slew of DLC and enhancements that apparently up the violence level appreciably.



## BALDUR'S GATE ENHANCED EDITION RELEASED ON STEAM

THE REMAKE OF THE CLASSIC BOWARE RPG IS OUT NOW ON THE STEAM DISTRIBUTION SERVICE

Looking for an epic roleplaying campaign, packed with great characters, expansive plot, and some lush graphics? Well, you might want to look a little backward to a new-old game that's just hit Steam:

*Baldur's Gate: Enhanced Edition*.

To many gamers, *Baldur's Gate* is near the pinnacle of RPG design, and the new Enhanced Edition fixes a load of bugs, adds new characters and elements, and improves the game for play on more modern, higher resolution machines.

And it's only \$US19.95 – for which you get a LOT of game.

## GREEN MAN GAMING OFFERS BIG DISCOUNT TO AUSTRALIAN GAMERS

FANCY GETTING SOME GREAT 2K GAMES WITHOUT BEING CHARGED THE INFAMOUS 'AUSTRALIA TAX'? GREEN MAN GAMING HAS YOU COVERED.

Games publishers have all sorts of reasons for justifying the high price of video games in Australia. We have a smaller population, maintaining local offices is expensive (as is marketing. Down Under), and more. But, regardless, most gamers feel the high price of local games is just too much.

Thankfully, digital distributor Green Man Gaming ([www.greenmangaming.com](http://www.greenmangaming.com)) agrees.

Following being pushed to raise the

Australian price on a range of games by publisher 2K, Green Man Gaming has announced a special discount code for Australian and New Zealand customers. Just enter GMGAU-3j9MF-MUINW, and you'll get 30 per cent off selected 2K titles, such as *XCOM* and *Borderlands 2*.

The code is apparently good for up to ten years.

It's great to see an e-tailer supporting local gamers, and being honest about who really pushes Australian pricing so high.



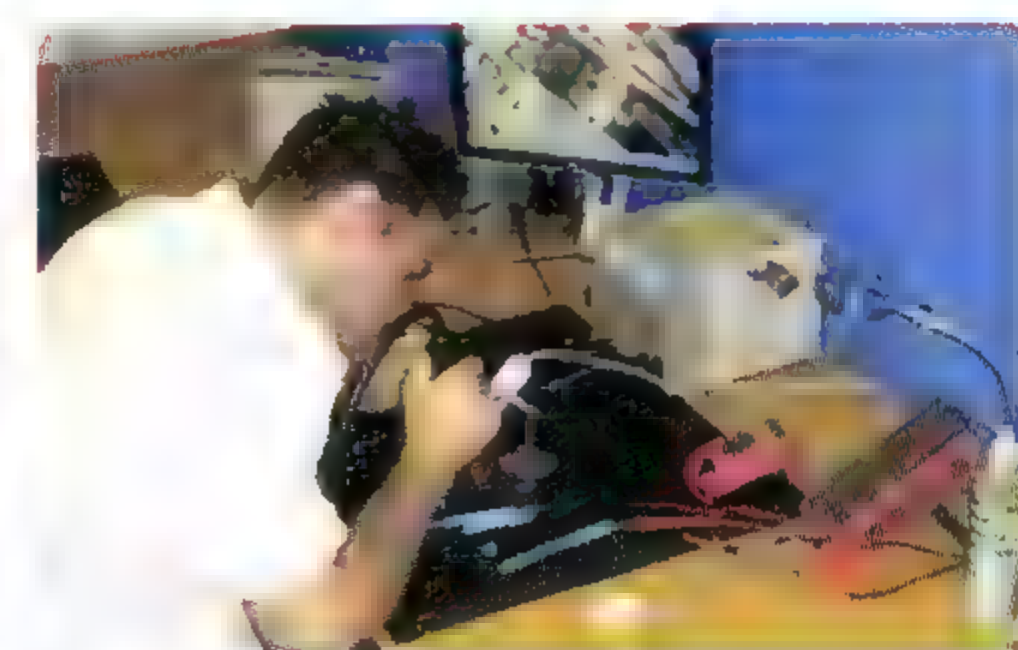
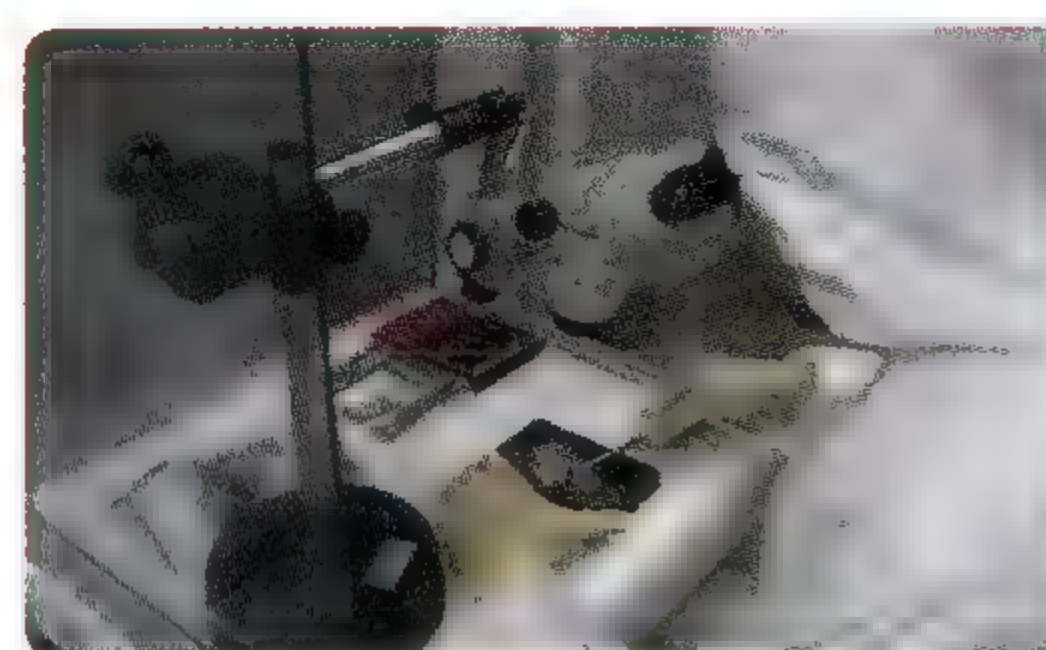
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**MODIFICATION** WITH ASHTON 'TWO MODS ARE BETTER THAN ONE' MILLS

# BETTER BACK-GROUND GRAPHICS

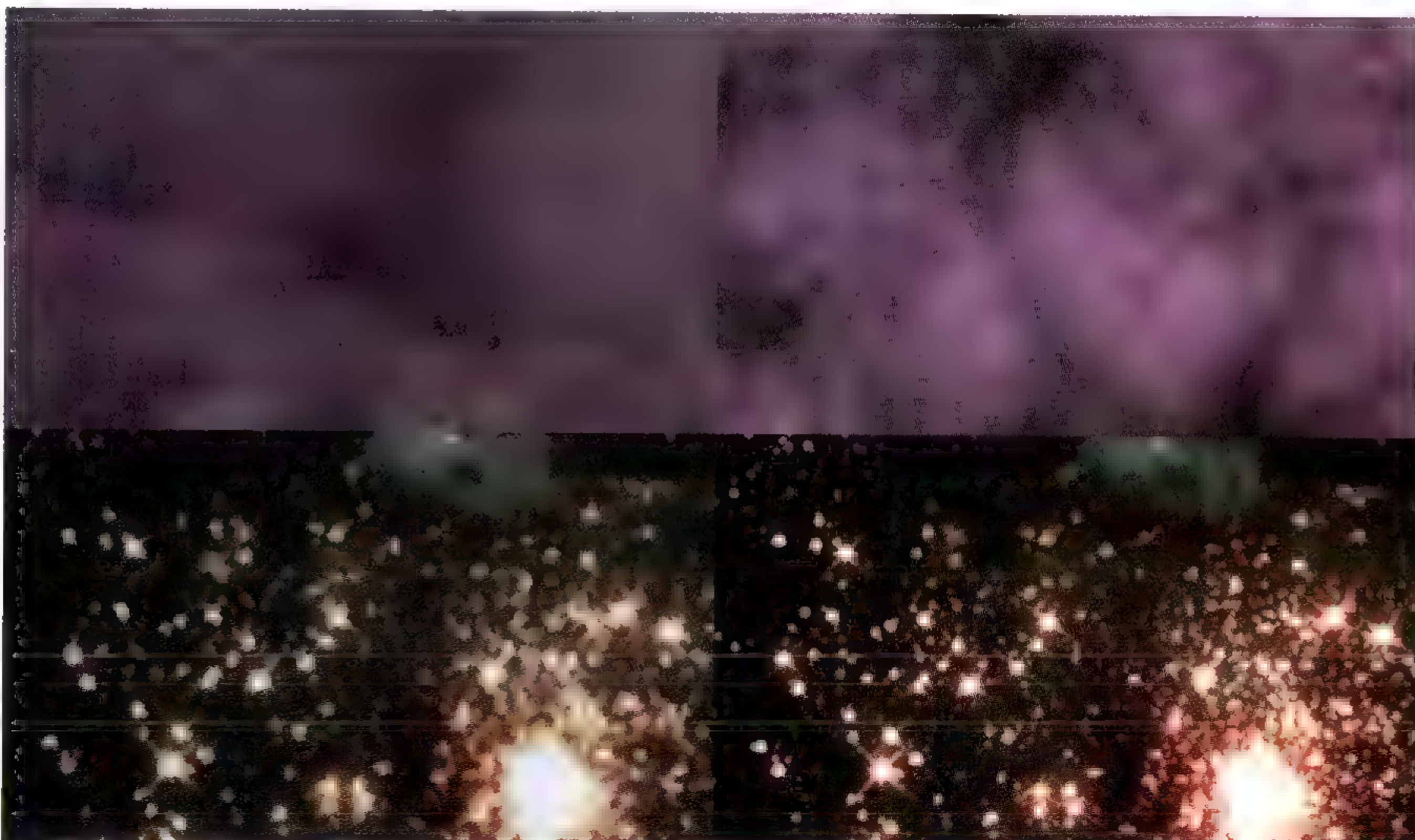
**GAME** FTL  
**WEBSITE** [www.ftlgame.com/forum/viewtopic.php?f=11&t=3107](http://www.ftlgame.com/forum/viewtopic.php?f=11&t=3107)

Indie hit FTL - Faster Than Light - has quickly garnered a following with its release last year. It successfully merges Rogue-like features with a sci-fi twist neatly wrapped into a retro feel. The result is an addictive, brilliant blend of 'just one more game' and 'oh frack it, seriously, one more game!'

Part of its charm lies in its retro graphics, which deliberately uses pixelated textures to represent the classic 8-bit gaming genre of old. And it does it beautifully. But an aspiring modder felt that perhaps in this modern age we don't have to forgo *all* graphical beauty, and thus the Better background graphics pack for FTL was born.

Planets, stars, suns, nebula and asteroids all receive some high-res love, and while you might at first think this wouldn't mesh while the rest of the graphics and the interface are low-res, it actually works quite well. Especially for the cloudy, animated nebulae that seemed excessively pixelated before, but not as stunning as the dangerous clouds they are.

It may not be to everyone's taste if you prefer the purist rendition of FTL, but if you feel like sprucing up this instant classic, the Better background graphics mod is the way to go.



## NEOTOKYO

**GAME** Half Life  
**WEBSITE** [www.neotokyohq.com](http://www.neotokyohq.com)

We actually looked at Neotokyo many moons ago, back when it was originally released, and the total conversion mod, much like a fine (albeit digital) wine, has only gotten better with age.

Neotokyo meshes classic Japanese anime culture with the squad-based competitiveness of games like Counter-Strike, bolstered with unique abilities and game modes. There's the standard three classes to choose from - Recon, Assault and Support - and a plethora of weapons to dominate the other team with.

This new version features improved character skins, weapon models, improved HUD, and a raft of new maps to play. For first timers there's an excellent beginner's guide on the Neotokyo site, along with a cheat-sheet to ease you in.

The download is hefty - 1GB in size - and if you like the music the soundtrack is freely downloadable as well, with the FLAC version racking up another 1GB! But as one of the more lovingly crafted total conversions it's definitely worth a look if you want to try something different from Counter-Strike or Team Fortress 2.





# Global Roaming Confusion

**P**C & Tech Authority reader Lindsay wrote to Investigator late last year about a problem with his global roaming charges on his Optus business phone account. He crosses the Tasman quite a bit for work purposes and it's proved to be costly on many occasions.

"I travel to New Zealand regularly for work and have been caught out previously with global roaming charges for data and the high cost of making and receiving phone calls. For one week I spent in NZ using my mobile for what I consider normal usage, the bill was over \$900, reduced by Optus by 20% after I complained about the high cost."

Lindsay realised, like many travellers, that there are alternatives and the best way to save on global roaming costs is to shop around and not rely on their local telco provider's roaming services. Telstra, Optus and Vodafone all offer pre-paid data and phone plans, but even these are more expensive than what's available with a roaming SIM.

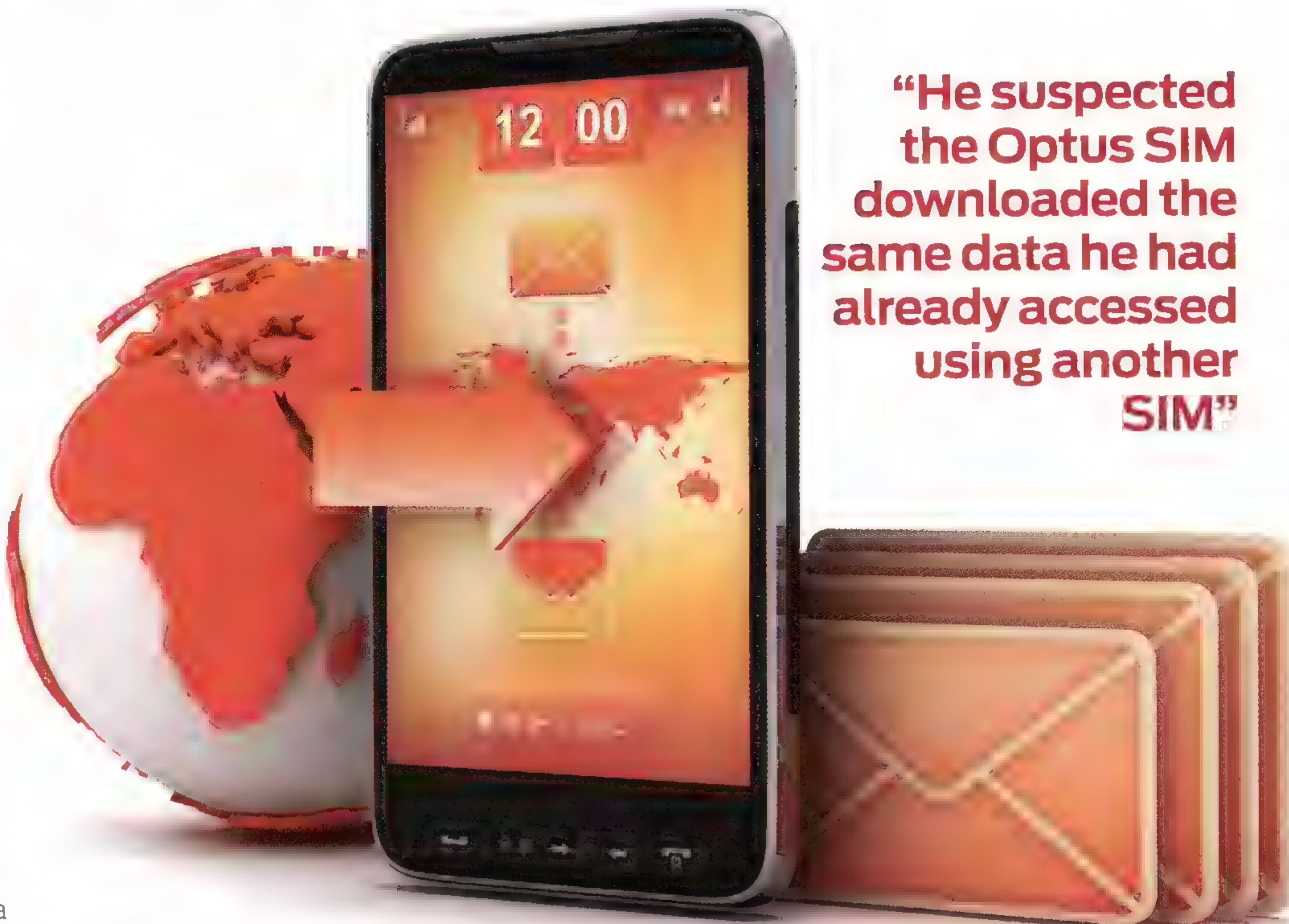
"When I asked at one of the Optus retail outlets about how to avoid the high global roaming costs I was advised that it was never wise to take an Optus SIM overseas and to always use a prepaid SIM whenever you travel."

"I have subscribed for about 10 years and I read an article in your magazine recently about the Woolworths SIM and the greatly reduced rates that were charged for the same services offered by Optus. I signed up for the Woolworths service and it worked well in NZ. I ran out of credit at one stage and for one afternoon mid-week was not in a position to buy more credit so put the Optus SIM back in the phone in order that I would be contactable.

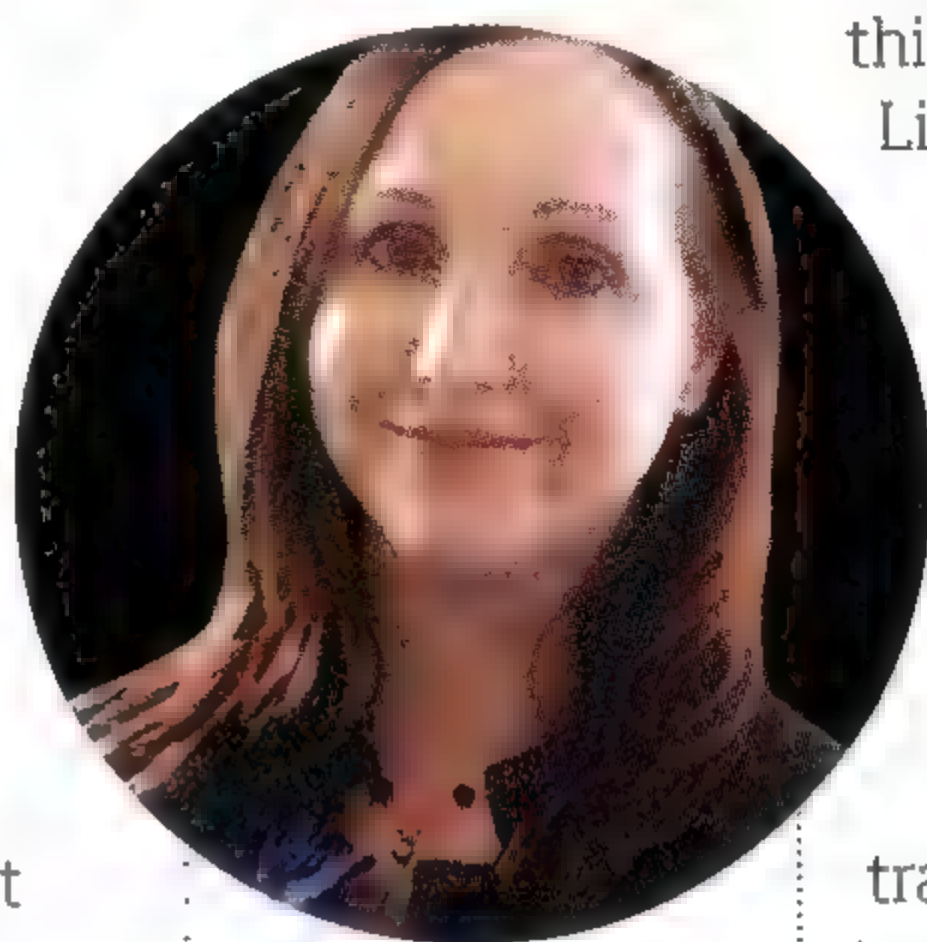
It was when he was back home that Lindsay found on his bill a charge from Optus of \$598.80 that he didn't think was accrued during the time he had the Optus SIM in his phone. He wasn't sure, but suspected that the Optus SIM downloaded the same data that he had already accessed using the Woolworths SIM. He contacted Optus to get an explanation of the charges.

"Optus was unable to give me details of the data that was responsible for the cost over the phone."

Investigator followed up Lindsay's



**"He suspected the Optus SIM downloaded the same data he had already accessed using another SIM"**



**ROSALYN PAGE**

has been a journalist for over 10 years specialising in the areas of consumer issues, technology and lifestyle. Rosalyn is the 2008 winner of the Best Consumer Technology Journalist at the IT Journalism awards. Her work is published in a range of newspapers and magazines

email with the Optus media team to find out what data had attracted the \$500 roaming charges and if the data had been downloaded twice, once with the Woolworths SIM and then again with the Optus SIM, as Lindsay assumed, or if it was extra usage and this hadn't been clearly outlined when Lindsay spoke to customer service reps on the phone originally.

Optus got in touch with Lindsay and offered a substantial credit towards the global roaming charges and said that there had been confusion over the charges.

Phone and internet usage while overseas is a necessary part of travelling, and not just for business travellers, but it's charged as an expensive privilege and the tales of woe from bill shock keep coming.

If you want to compare prices from the major telcos, use these links for Optus, Telstra and Vodafone, so at least you'll know what you're likely to be charged:

[www.optus.com.au/shop/mobilephones/usingyourmobileoverseas](http://www.optus.com.au/shop/mobilephones/usingyourmobileoverseas)  
[www.telstra.com.au/mobile-phones/international-roaming/](http://www.telstra.com.au/mobile-phones/international-roaming/)  
[www.vodafone.com.au/personal/international-roaming](http://www.vodafone.com.au/personal/international-roaming)

This year the industry regulator is

set to release a new global roaming standard that requires telcos to give an SMS warning about global roaming costs, standard costs for calls and SMS and data in the country, and allows users to turn off roaming. This won't reduce the costs that are charged by the telcos, though - that's another matter entirely.

The government, through the Department of Broadband, Communications and the Digital Economy, won't mention legislating to cap global roaming charges. Although Australia attended the recent UN International Telecommunications Union world conference, there were no international telecommunications regulations to reduce global roaming costs. Instead, there was agreement on more transparency in pricing in the new treaty, but this is not binding and countries regulate their own telecommunications laws.

**HAD AN ISSUE AS A CONSUMER? INVESTIGATOR CAN HELP.**

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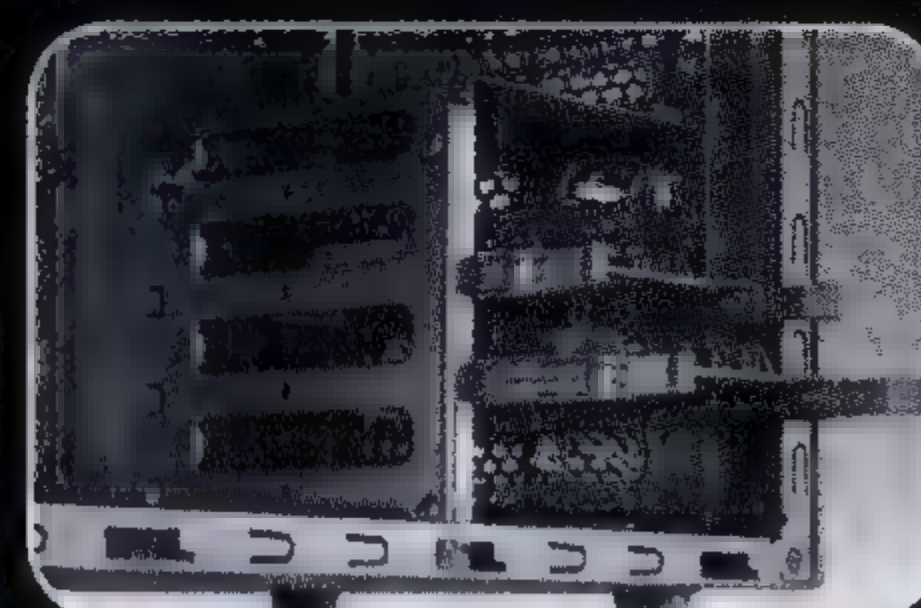


# CENTURION 6

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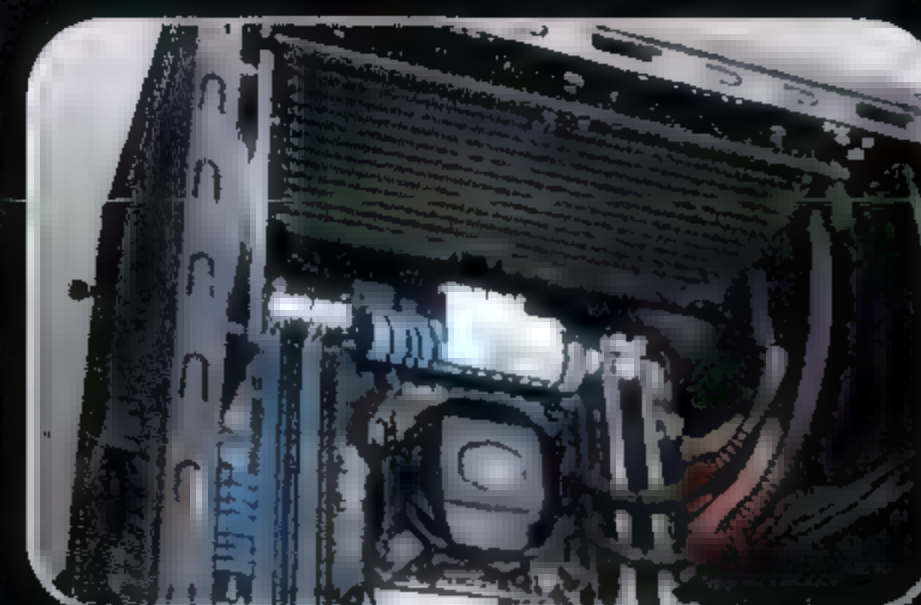
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# All cached up

**ASHTON MILLS** INVESTIGATES FANCYCACHE, AND DISCOVERS WHAT A GOOD JOB WINDOWS ALREADY DOES...

**M**emory is cheap. Or at least, it is at the moment. We're in a time when 4GB for a desktop is considered small, when a high-end desktop sports around 16GB, and when if you really want it - just because you can - 32GB or even 64GB is eminently viable.

There are plenty of legitimate reasons to have large volumes of memory too, especially in publishing, audio and video work, and with virtual machines. But if you're not rendering the next Pixar movie or building Skynet, what else *can* you do with it?

Well, there's always a cache... and so I started one on Saturday night. (I know, I'm wild.)

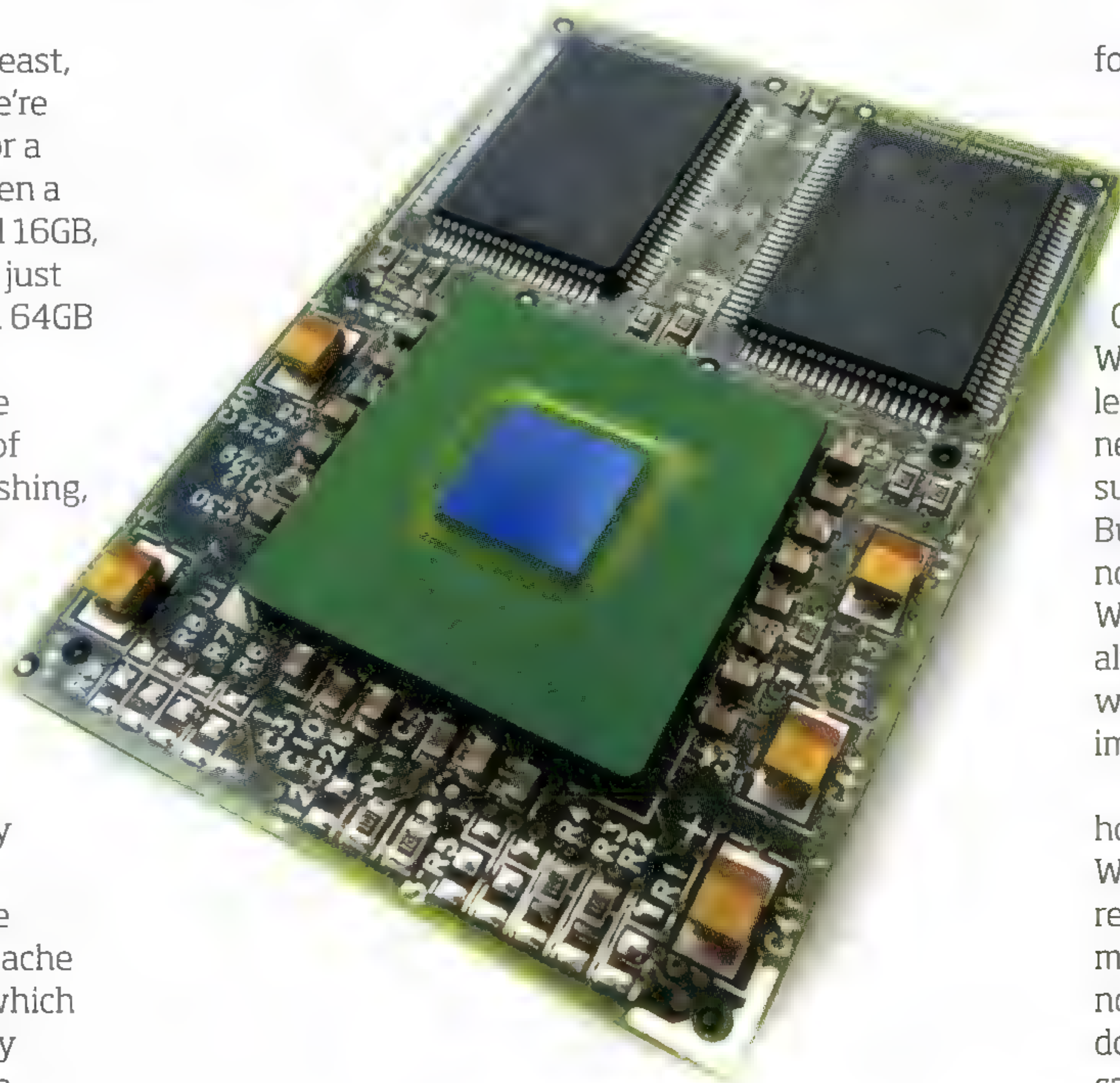
There are a number to choose from, including the free FancyCache ([www.romexsoftware.com](http://www.romexsoftware.com)), which I settled on to eat up some of my 16GB. The premise is simple: use system memory to cache data from your drives. Read-caching stores read data, providing a tangible speed-up for subsequent accesses, while write-caching can allow Windows

**"FancyCache makes it easy to see how well the cache is performing, and therein a mystery began."**

to snappily get back to what it was doing while the data is written in the background. Even in this age of SSDs, caching can have a benefit - while fast, SSDs can't match the speed of system memory, which is many magnitudes faster.

Because I was curious, I thought I'd see if FancyCache would have an impact on my SSD system, mainly in reducing level load times and heading off any stream stuttering in games (especially taxing games like Crysis 2 and Skyrim that use large volumes of high-res textures).

FancyCache makes it easy to see how well the cache is performing, and therein a mystery began. While the read hit percentage with disk benchmarks like CrystalMark and



AS-SSD indicated excellent hit rates, as you'd expect, I had the strangest experience with games: the cache didn't appear to work, with hit rates of less than one per cent. Backing this up, speeds didn't seem any faster.

Odd. And since I can't leave a problem unsolved, cue an hour of experimentation. Could it be the cache was too small to fit game data, and therefore was not being used? Possibly, as most of the tested games were beefy buggers at 5-10GB. But at the same time, the game only loads what's needed on the fly, so this couldn't be it.

Looking again at the benchmark tools held a clue: in order to produce an effective benchmark of an I/O subsystem, programs like these bypass the Windows file cache. So, what if the Windows file cache was getting the hits first for the games?

Creating a new FancyCache taking up almost all available memory, leaving only a smattering for Windows and its file cache, I tested again. Voila! Hit rates of 50 per cent or more.

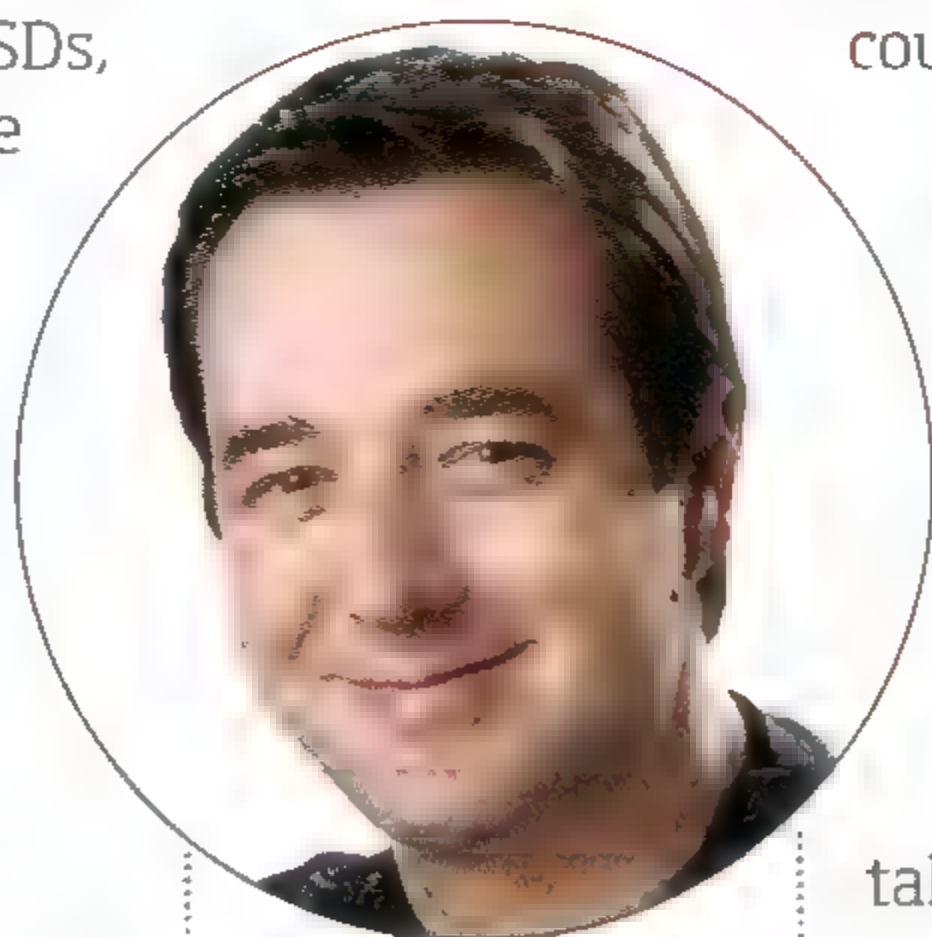
Problem solved. FancyCache was sitting between the Windows filesystem layer and the device layer, providing hits only if data wasn't

found in the Windows file cache first. However, it still wasn't any faster.

I then tested with FancyCache disabled but using Windows' LargeSystemCache registry setting (aka prioritised for System Cache on Server versions of Windows) to ensure Windows would let the file cache grow as much as needed, and tested again - and no surprise, the speeds were the same. But it wasn't a case of FancyCache not working as intended, just that Windows' file cache was already always doing the job, so the games were already being cached enough to improve performance.

Of course this begs the question: how useful are caching programs if Windows has its own anyway? For read-caching on your average desktop machine, probably not a lot. But that's not to say caches like FancyCache don't have a place - Windows' file cache won't do deferred writes, as it's seen as a stability issue. This harks back to the days of DOS 6.21, which enabled the *smartdrv* cache to do a similar thing, and resulted in a flood of users complaining of corrupted data: if the machine crashed or lost power, the unwritten data was also lost. Microsoft later reversed the change. (Well, there is an option to disable flushing writes under the Policy tab of a drive's properties in Device Manager, but note the warning text.)

I digress. Since power outages are relatively rare, if you have spinning-disk drives something like FancyCache with deferred writes can help a lot. If you're looking to make use of spare memory to boost read performance with a cache, though, Windows does a decent job all on its own, and you may find your system is already making the most of it.



**ASHTON MILLS**

Has been journalist for many of Australia's top publications, and is an expert in all things Linux.

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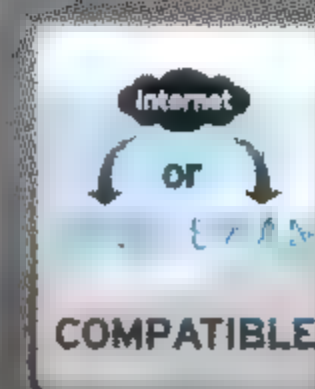
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# Science versus SoftRAM

**DANIEL RUTTER** LOOKS AT ONE OF THE GREAT CON JOBS OF EARLY DESKTOP COMPUTING, AND HOW IT HOPEFULLY COULDN'T HAPPEN TODAY

In his 1974 speech that's since come to be called "Cargo Cult Science", Nobel-Prize-winning physicist Richard Feynman explained the chief difference between science and "pseudoscience". Pseudoscience is non-scientific activity that apes the forms and conventions of real science, just as the post-WWII Pacific-island cargo cultists built faux runways and wooden radios and marched around and saluted each other in the faithful expectation that this would cause the aeroplanes full of wonderful cargo to come back.

The chief difference, Feynman said, is that in *real* science, you must take care to not fool yourself, because "you are the easiest person to fool".

It doesn't matter how clever you are. Or even how knowledgeable you are. If you don't take pains to avoid fooling yourself, you *will* end up believing things that aren't true.

Take, for instance, SoftRAM.

SoftRAM, from Synchronys, was a 1995 utility for Windows 3.1 and the then-new Windows 95.

Synchronys said SoftRAM used clever compression tricks to double the effective memory in your computer, which was a big deal when 16 megabytes of memory cost \$750.

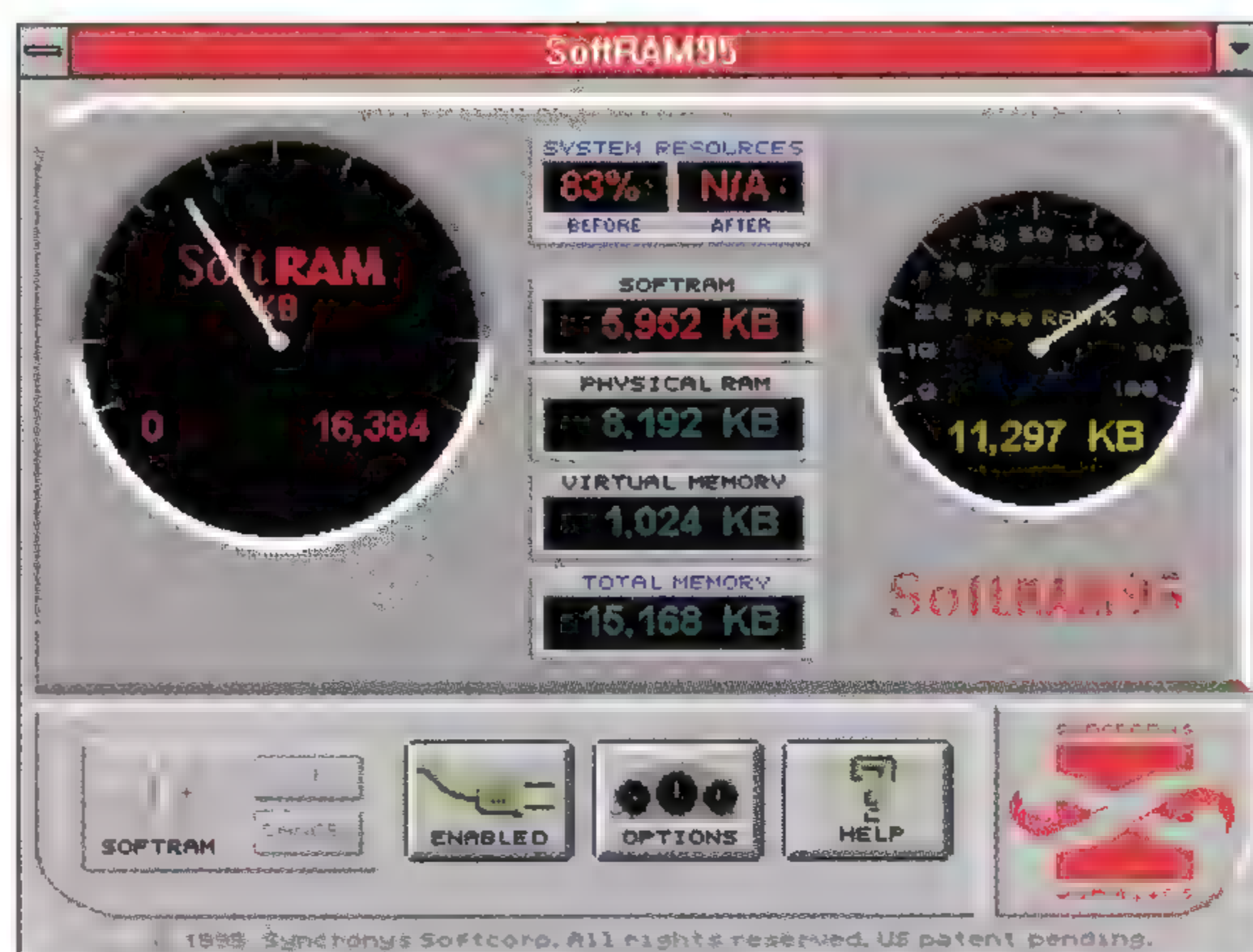
A program that'd turn your four-megabyte 386 into an eight-megabyte machine sounded like a great idea. And SoftRAM only cost about thirty bucks US. (List price \$US79.95, but this was when there was a big difference between list and "street" prices.)

What SoftRAM actually did, though, was enlarge the swap file, and multiply the RAM your computer *reported* having by two.

That was it. SoftRAM did nothing else, except slow your system down a bit. It was a total scam.

Some other RAM compressors, like Connectix's inventively-named "RAM Doubler", actually worked. But SoftRAM did not.

The US Federal Trade Commission made Synchronys recall its product, and told it to give refunds to any customers who asked. A lot of customers asked, but many were still waiting to get their money back when Synchronys went out of business in 1999.



Synchronys sold *hundreds of thousands of copies* of SoftRAM. 600,000 units just of the Windows 95 version, according to Germany's venerable *C't* magazine, which was instrumental in exposing the scam. SoftRAM was, according to a possibly unreliable Synchronys press release, the best-selling Windows utility software for months on end.

**"That was it. SoftRAM did nothing else, except slow your system down a bit."**

How do you sell that many copies - into a much smaller market than exists today - of software that does nothing?

You take advantage of people's natural aversion to the scientific method, that's how.

It was easy for anyone to test SoftRAM. Time some task that's not very fast because you don't have enough RAM and are beating the heck out of the swap file, then install SoftRAM, and time the same task again. If you're a big fancy computer magazine you could even have two identical computers side by side, one with SoftRAM, one without.

But for months, it seems none of those big magazines *did* such a test.

Outright scams can be difficult targets for the scientific method, because you don't generally expect a commercial product to be completely worthless. So if you did a proper test and found SoftRAM didn't do anything,

your first assumption would be that you'd messed up the test somehow.

(When the scam started to unravel toward the end of 1995, Synchronys played into this by claiming the software had some "bugs", which mysteriously caused anybody who tested it properly to find it didn't do anything.)

Some print publications may also have kept their reservations to themselves, lest they be sued by Synchronys. It's also perfectly defensible to decide not to print a review of a dodgy product at all, if you can replace it with a review of something actually worth buying.

A lot of early reviews of SoftRAM, however, expressly stated that it *did* work. *PC Today* actually managed to rate SoftRAM as *better* than RAM Doubler and *two other* real memory-compressors.

The only honest ways to come by this impression are by not testing anything properly at all, and just going on your unreliable human gut instincts, or by *actually* messing up your tests, quite severely.

Humans routinely fail to use controlled tests and critical thinking when it really, really matters. Never mind wasting money on useless software; how about you should see an actual doctor, or a psychic aura therapist, about that funny lump you just found. Or deciding who to vote for. Or whether it's a good idea to go into astonishing debt just so you can "own" a house.

Science is hard. But you've got to do it, surprisingly often, if you want some actual factual knowledge about not just your computer and car and health and personal finances, but pretty much everything else in your life too.

Also, it'll help keep your money out of the pockets of scumbags like Synchronys.



**DANIEL RUTTER**  
Dan Rutter has been a contributor to Atomic since its inception, and writes more at [www.dansdata.com](http://www.dansdata.com)

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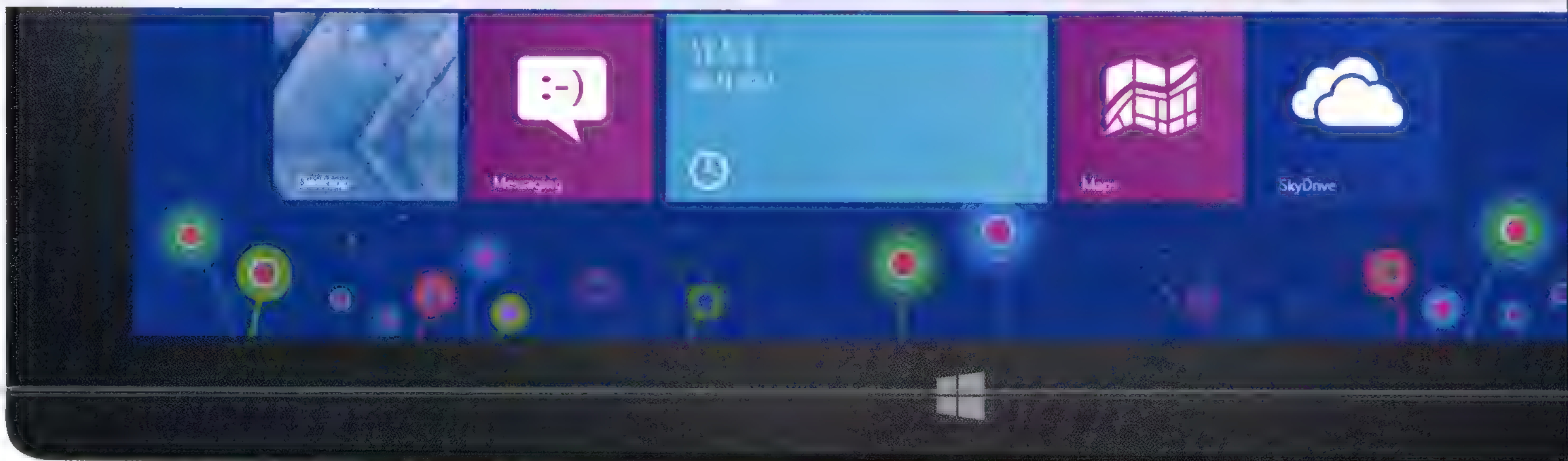
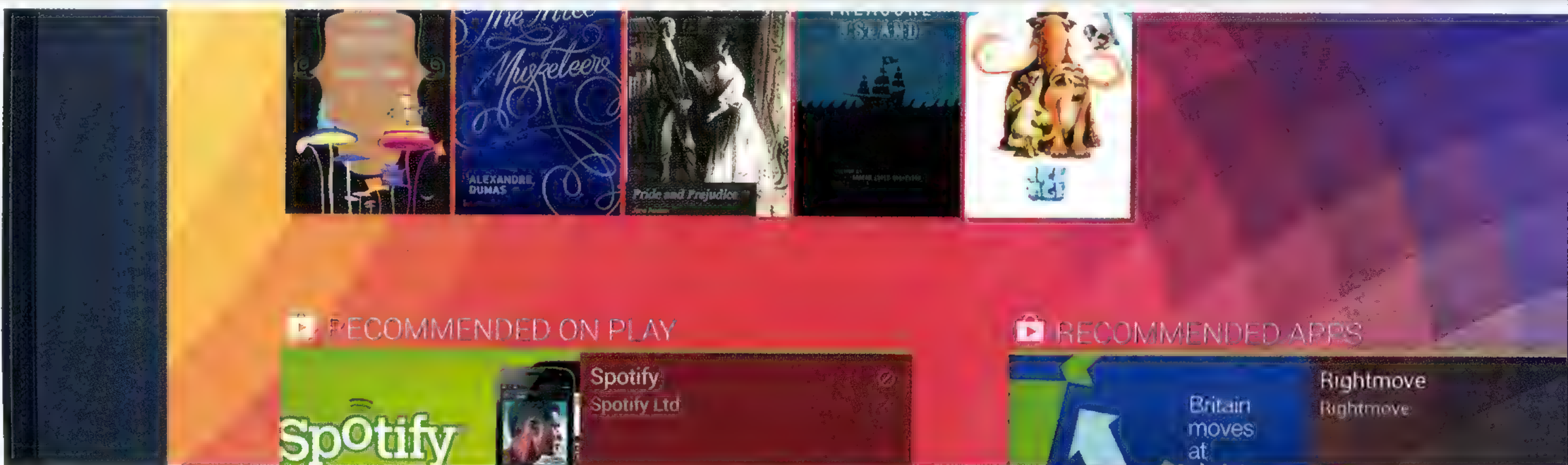
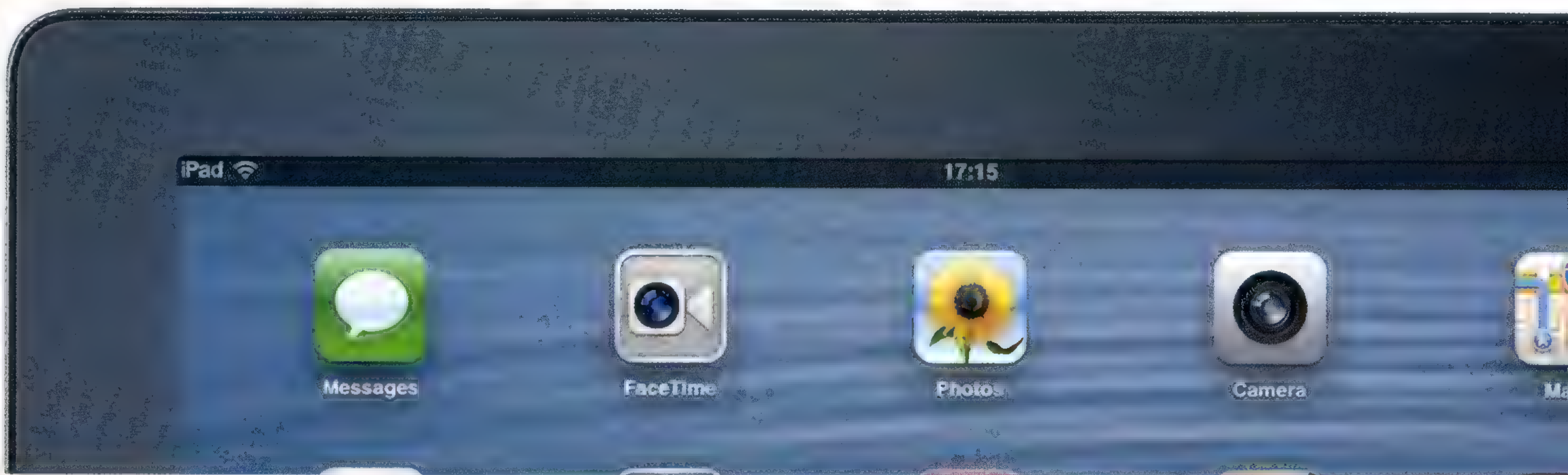
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# CHOOSE YOUR team

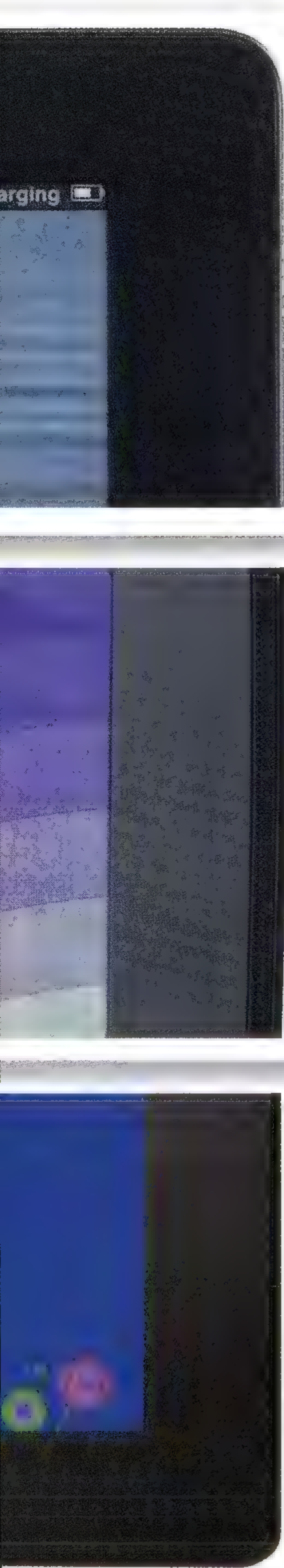
DO DEVICES FROM THE SAME MANUFACTURER REALLY WORK BETTER TOGETHER, OR IS THAT JUST MARKETING NONSENSE? DAVID BAYON FINDS OUT





**A**pple users swear by their iDevices, Microsoft fans froth over Windows 8, and Google has its fingers in every pie these days - but for the millions of us who don't feel the need to side exclusively and obsessively with one brand, what are we missing out on?

In this feature we throw ourselves into the world of the big three players, to see if their devices really work together as well as they claim. But we're not gullible here at *PC & Tech Authority*. We also explore the mix-and-match approach to see if you can enjoy the best of all worlds simply by buying the best gear for each job - regardless of brand.



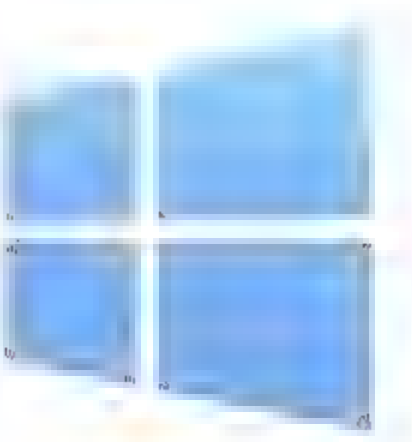
# Apple



# Google



# Microsoft





# Apple

**M**uch as we loathe the word "ecosystem", there's one company that has long understood the concept better than most. For years, users have been kept within Apple's walled garden, whether it's through the weight of the DRM on their iTunes collections (until it was dropped in 2009) or simply the wealth of apps that most users have accumulated over time. If you bought into the shiny world of Apple when the iPhone first arrived, it's more likely than not that you're still there now.

That's with good reason, as few could deny that Apple's many devices work together smoothly. From MacBooks and iMacs, through iPhones and iPads, to the Apple TV and even Time Machine backup devices - and all with iCloud floating above and AirPlay whooshing files around - for some time it's been possible to work and play almost entirely through this one company's products.

## APP SIMPLICITY

Even Android enthusiasts must concede that Apple handles the link between smartphone and tablet apps more elegantly. Buy an app for the iPad and more often than not, you can download a tailored iPhone version as well. Finding each is vastly easier, too, thanks to a full tablet section in the App Store - something Google still hasn't enforced. On the rare occasion that a device is launched with a new aspect ratio or resolution, the App Store's big names catch up remarkably quickly - usually within a matter of weeks - and Apple's control over the hardware means you can be certain before you buy that an app will run smoothly on your device.

There's also the Mac App Store, which contains higher-priced desktop applications but is still tied to the same Apple account used on iOS. You don't have to purchase software in this way for the Mac, and many prefer the freedom outside Apple's walls, but doing so means you can easily

download all of your apps onto a new Mac from one location, and apply updates. No more faffing about with product keys and scratched discs.

## ICLOUD

That single login makes it easy to stay on top of your various purchases and downloads across several devices, and that simplicity is further enhanced by Apple's iCloud. In the same way that a Gmail account gradually made us into Docs users, and then introduced us to Google Drive, Apple's devices lead users straight into setting up an iCloud account with 5GB of free storage - and as of last winter, 150 million people had done so.

At a basic level, it's a syncing tool. It marries your email, contacts, calendars, bookmarks and so on, working across OS X Lion and Mountain Lion, and iOS 5 and upwards - and Windows devices too. It also frees iPhone and iPad users from the ties of iTunes, allowing devices to be backed up wirelessly to - and restored from - iCloud. It lets you easily download purchases made on one device to all of your others, as well as sync Safari and iBooks pages across devices. You can set up a Photo Stream

**"Few could deny that Apple's many devices and services work together smoothly"**

so your snaps are uploaded on the fly, and it enables Apple's Find My iPhone service, for locating lost and stolen handsets, and more recently, the Find My Friends feature.

Separately, but on the same Apple ID, is iTunes Match. For \$34.99 a year, you can let Apple safeguard your music collection by scanning your tracks and either finding a match in its huge database, or uploading any unknown tracks. Then, on up to ten iTunes-compatible devices, you can stream or download any of your tracks from anywhere with a data connection -



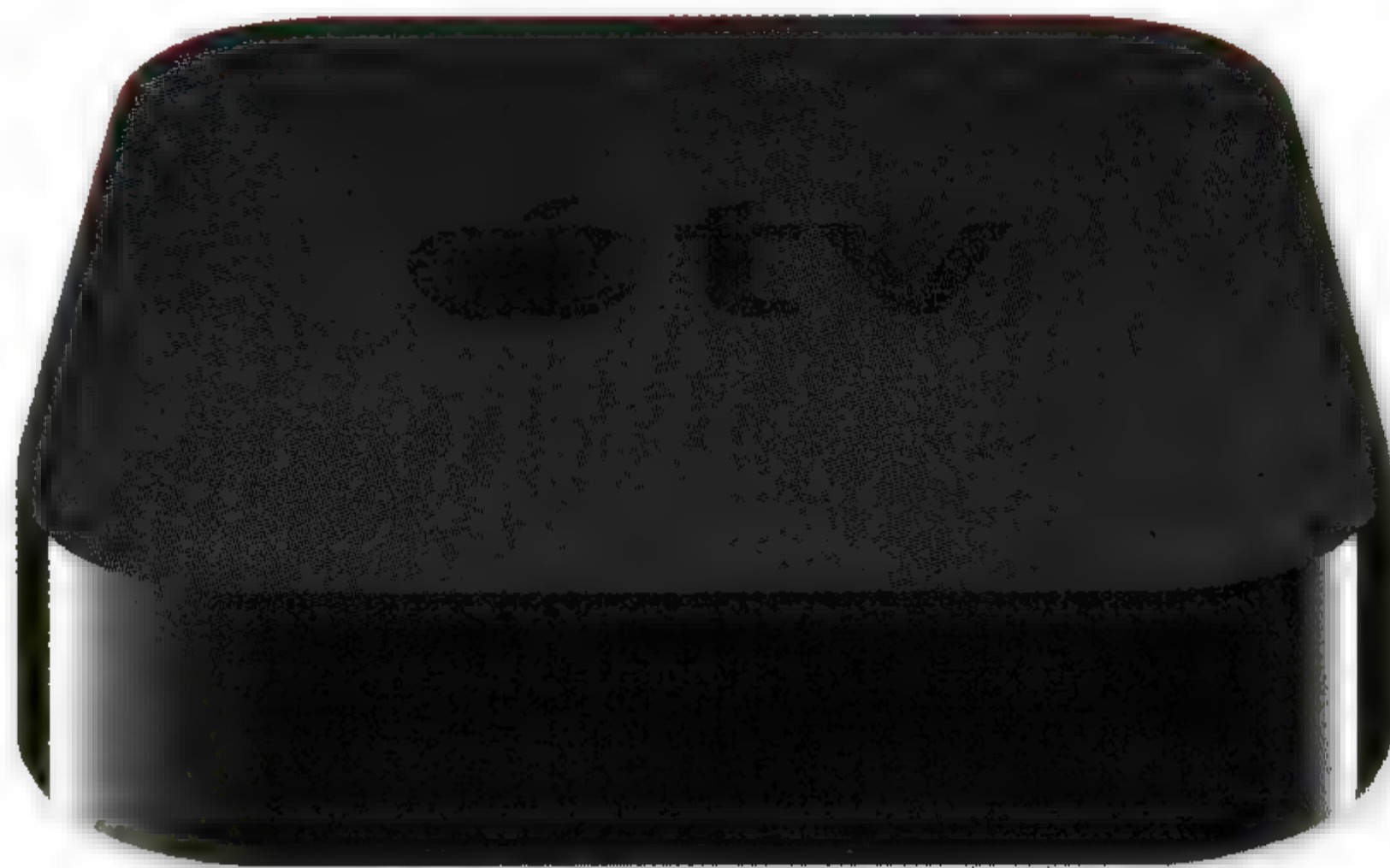
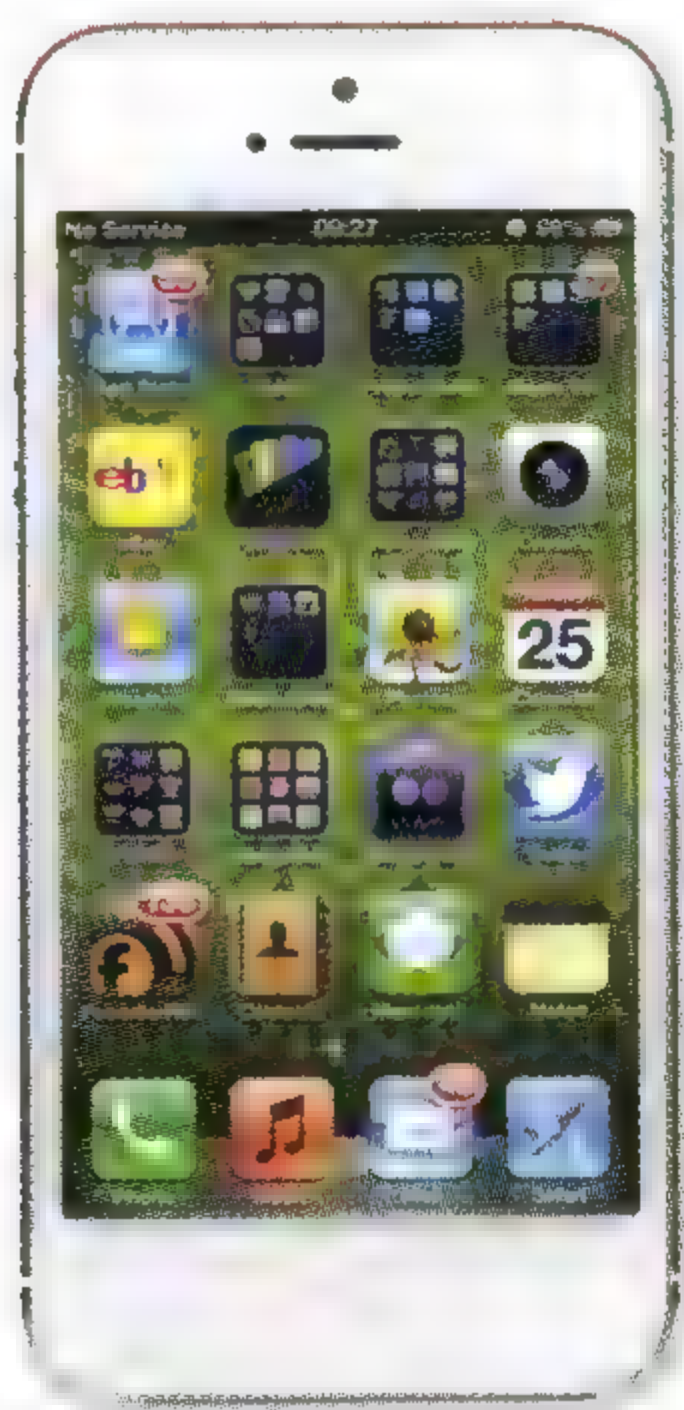
and at 256Kbits/sec, regardless of the quality of the original file. On iOS devices the tracks also download as they play, so you'll gradually create an offline collection of favourites.

At the tail end of 2012, iTunes Match came under serious threat for the first time from Google's new music service. However, Australia is yet to get access to the Google Play Music experience, while iTunes Match has been available for some time. Not only do we have no idea when Google's competitor will arrive on our shores, but the experience for Apple users will only be available through the browser, making it less flexible and convenient than simply leaving your iPad's Music app playing in the background.

## BIG SCREEN

While the iPad is a great couch device, there's one more piece of tech that can make Apple the core of your living room: the Apple TV. Tiny, silent and stylish, it works seamlessly on its own or with other Apple devices to pull down a wealth of internet content, including catchup TV and YouTube, and it includes the full iTunes library of films and TV programmes for rent or purchase. That applies to music, too,





which is great if you have your TV connected to a good set of speakers.

The interface is second to none, making the task of finding, downloading and playing content as effortless as any device we've seen. The included remote is simple to use, or you can download the Remote app for an iPhone or iPad, which makes entering text search terms much easier. In contrast, the complexity of an Xbox controller can often frustrate non-gamers. Apple TV pulls in anything you've uploaded to iCloud, giving you further reason to shell out for iTunes Match.

The feature that makes it more than just another set-top box is AirPlay, which lets you push content from an iPhone, iPad or Mountain Lion-equipped Mac to the Apple TV over Wi-Fi. This circumvents some of Apple TV's omissions - while it has no integrated Spotify service, you can use the Spotify app from iOS over AirPlay - and it works with many games, too, turning your TV into a rather limited games console.

AirPlay's main function, however, is to mirror the content onto the big screen. How successful it will be in your home depends on your Wi-Fi

connection, your network setup and on the type of content you want to mirror.

Unsupported services such as can be fudged by setting AirPlay going with supported content - playing a song from the Music app, for example - then switching to the video you want.

### THE BIG PICTURE

Only six months ago we could have said Apple's integration from the pocket to the desk to the lounge room was unparalleled, but Windows 8 means there's another way to commit yourself to a single company's products. Both have their advantages.

We'd argue that for ease of use, simple networking, and the overall quality of devices, Apple is hard to beat. Its iMacs and MacBooks routinely top the *PC&TA* A-List, and it's taken several years for Android to become a genuine rival to iOS. When it comes to apps, iOS is still the clear leader.

However, you can't have it all if you choose the Apple way. While the iPad is a great gaming device, you'll only find a handful of OS X devices with powerful enough discrete graphics cards for desktop gaming, and even then many big-name titles aren't available or come out long after the major

gaming platforms. No-one could argue mirroring the iPad over AirPlay comes close to the experience of gaming on the Xbox and dedicated Android gaming devices like Ouya and Nvidia's Shield will provide a much stronger presence for Google this year.

Still, when we talk about buying Microsoft devices from top to bottom, we're talking theoretically for now - the Surface is relatively new, and Windows 8 will take time to become popular. By contrast, there are countless users who already live within the Apple ecosystem, and have done for some time. Ultimately that's as much a lifestyle choice as it is an endorsement of the hardware, and that's something other companies can only hope to replicate.

### PROS AND CONS

#### Pros

- ✓ Device quality is universally high
- ✓ Apple TV and AirPlay work superbly
- ✓ Fully supported by app developers

#### Cons

- ✗ Expensive hardware and services
- ✗ Difficult to get out once you're in



# Google

**O**n the face of it, Google is at a disadvantage when it comes to taking over the home. With the exception of the Chromebook, which we'll come to later, it has no real desktop operating system, and therefore relies heavily on mobile to get its wares into consumers' hands - something it's pushing with each partnered hardware release, such as last month's Samsung-made Nexus 10.

This isn't to say it has no desktop presence; while it lacks a hardware solution, it has a presence almost as ubiquitous as that of Microsoft.

We use Google to search the web, to send emails, to chat to friends, to store, edit and collaborate on our files - and that's without considering the behemoth that is YouTube. The Google+ social network hasn't exactly caught on with consumers, but it's yet another way that Google is attempting to be a core part of our everyday lives.

The difference between Google and its two main rivals is that its Android platform is a little more standalone in nature, even if that's something Google is trying to change. Your Android

smartphone and tablet might share apps - gradually increasing in quality and quantity since Android 4 arrived - but you probably won't be hooking them up to a big screen, even if you're one of the few who have invested in a Google TV.

## GOOGLE'S TV STRUGGLE

Whether it's an LG Smart TV with Google integration or an Apple TV-style box such as the Sony NSZ-GS7, it's safe to say the number of people even aware that Google has a TV presence is pretty low.

In our review of Sony's Google TV device, we bemoaned the lack of proper Google Play store access: you get access to a limited array of Google TV-compatible apps, but the hardware lacks the processing muscle to give the user free rein. A lot of killer services from overseas are missing, which makes it an even tougher sell here.

We had issues playing some file formats, such as MKVs, and the reliance on the bundled remote control instead of an official tablet or smartphone app is an oversight that will surely be rectified sooner rather

than later. You could also use an app such as Plex: it lets you stream media from a laptop or PC to a Google TV using a tablet or smartphone as the remote control.

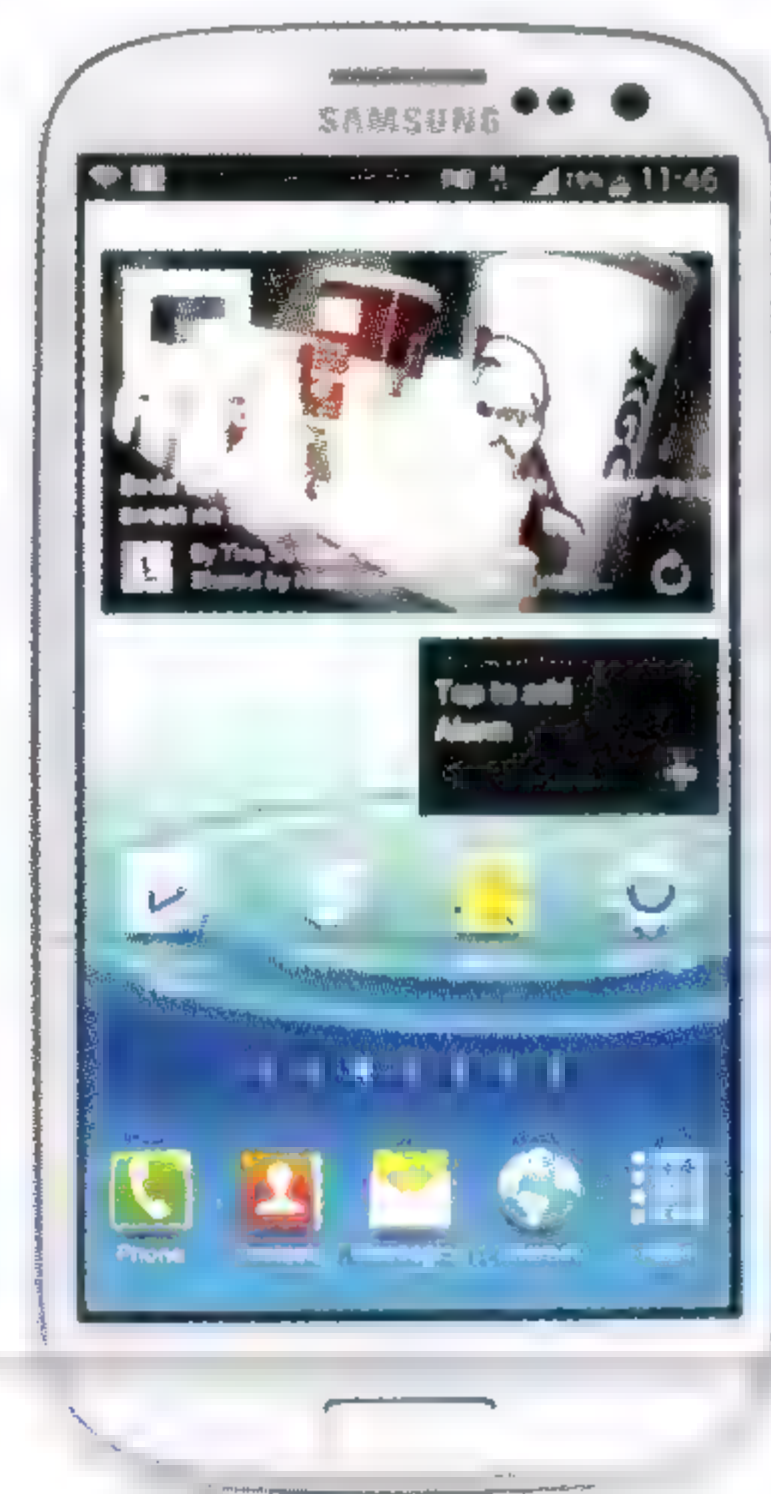
Google TV is by no means a bad product, and as the apps increase and the licensed services grow, we hope it will become something that people will want under (or in) their TVs by version two or three - as the Apple TV has.

**“A lot of killer services and products from overseas just aren't available here”**

However, it lacks the ease of use and consistency of interface that would make it a consumer favourite; we can't see many non-techie households embracing its foibles out of loyalty to the Google brand.

## CLOUD FOCUS

Much as the lack of streaming services makes the TV experience hit and miss in Australia, the lack of a local audio





solution is noticeable – we are yet to get access to a lot of the more impressive cloud services in its stable. It briefly announced that Google Music was coming to our shores last November, but that was soon retracted and Google apologised for the error.

Google hasn't given a revised date either, which is a real shame, because this is one area in which being on an Android device has benefits. The app is by far the nicest way to stream or download your music – on all other platforms you have to use the browser, download a third-party app or perform a bulk download of the whole collection using the rudimentary Music Manager application for Windows or Mac.

Then there's the cloud-based Chromebook; Google has persevered with this concept through its uninspiring beginnings and the latest wave is being praised as affordable and rather appealing devices. It appears that we won't be seeing Google push the concept locally for the foreseeable future; however, given the good reception for the new Chromebooks overseas device, manufacturers could start selling them here and force Google's hand.

They were initially designed to be entirely cloud-based laptops, but Google has backed away from this a little. Chrome OS's offline apps have improved, and it now has a proper desktop. Although the Chrome browser still sits at the heart of everything, Google has added full Drive integration into the basic file browser to make it as easy as possible to use the Chromebook with your other devices.

In fact, Google Drive is one of the company's biggest strengths, offering most of the file-syncing features we've

come to expect from cloud services, but crucially combining them with the productivity of Google Docs. We use Docs for all sorts of collaborative and organisational tasks in the office, and its word processor and spreadsheet functions are fine for basic editing of Office files – albeit more for the content than the formatting. Extra tools such as Google forms and Fusion Tables are genuinely useful for students and home workers. The whole suite may not feel as immediately familiar as Microsoft's Office Web Apps, but the popularity of Gmail means many people already use it purely out of convenience.

## MOBILE

It goes without saying that Google Drive is also a must-have app for Android, and smartphone and tablet users can easily connect their Gmail accounts out of the box. Which device they use is a question that gathers more potential answers with every passing month: right now, the HTC One X, and the Nexus 7 and 10 tablets top our recommendation lists, but it's a constantly changing roster.

Growing from its smartphone roots into a flexible all-round mobile OS, Android has put the company into many homes, even if Samsung, HTC and others tend to take the glory; some owners don't even realise the connection with Google. It's also rapidly becoming a great way to consume content, with Google Movies and Magazines being locally available midway through last year.

You don't really need a PC to get the most from Android devices, and most syncing software is made by the handset manufacturers rather than any kind of centralised iTunes-style hub.

That isn't necessarily a bad thing, and simply syncing all of your accounts and files with Google's servers is how many people keep themselves backed up.

## GOOGLE HOME

There are plenty of apps in the Play store that let you use your smartphone as a music player, or your tablet for streaming video, and Google's wide range of web services are well established and tough to beat. Even the Chromebook has evolved from rather a joke into what looks to be a genuinely viable laptop replacement – at least for certain niche users.

While Google has become a strong player in the home, there's no escaping the nagging realisation that it's less an ecosystem and more a collection of disparate elements, especially given that some of its key products just aren't available locally. You could argue that someone who uses Drive, Movies and an Android phone is buying into the Google platform, but they're almost certainly still using Windows or a Mac for their daily tasks. That final piece of the puzzle is likely to elude Google in the long run.

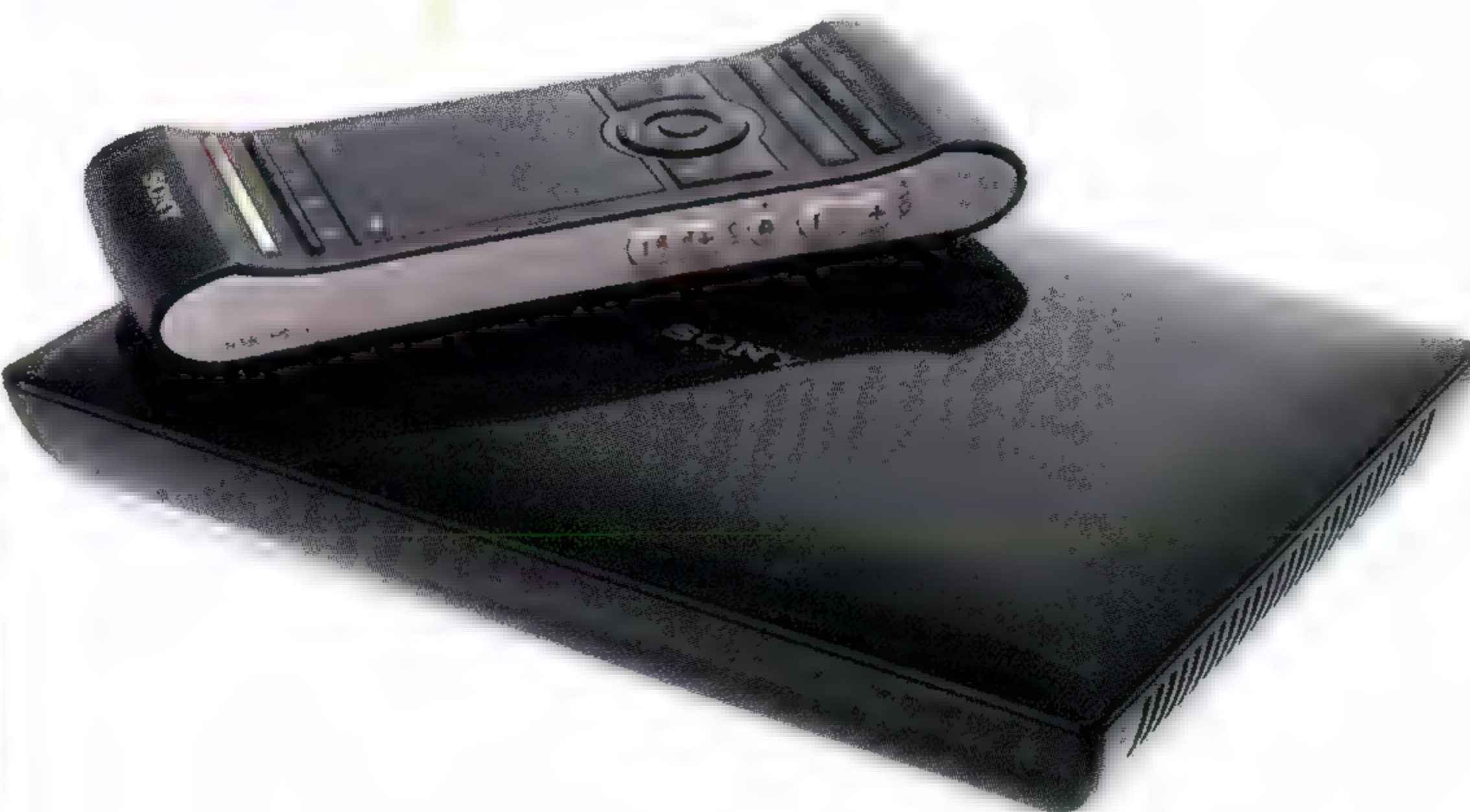
## PROS AND CONS

### Pros

- ✓ Most of us already use Google services
- ✓ Much lower cost of entry than Apple
- ✓ Android is improving rapidly

### Cons

- ✗ Patchy local availability
- ✗ Google TV needs a lot of work





# Microsoft

**T**he newest all-round player is Microsoft, now that its Surface tablet and Windows Phone 8 handsets have been released. However, the company's biggest strength is arguably the Xbox 360 – a ready-made route into the living rooms of 70 million homes worldwide.

Microsoft has been hard at work refining the Xbox experience to be as much like Windows 8 as possible, redesigning the dashboard with Live tiles to get people used to the OS's layout. Whether that's a good thing is open to debate – from all the TV content and advertising on the homescreen tiles, a new user may not even guess that the Xbox 360 is primarily a games console.

That's deliberate, and it's because Microsoft wants the Xbox to be more than that. It has an on-console deal with Foxtel along with its own Xbox Video service. In the audio space it has Xbox Music, a Spotify-like service for downloading and streaming music to tablets and smartphones. It's all tied together with a revamped Bing search function that pulls in both Microsoft and third-party results, plus a revamped IE for Xbox, and all of Microsoft's entertainment services incorporate Kinect.

## INTEGRATION

Microsoft has watched Apple integrate iPhone and iPad development, all the while working to push out its own solution: the universal codebase for Windows 8 and Windows Phone 8 apps. Thanks to an array of versatile hardware, all of which will have the Windows Store installed as part of the new OS, Microsoft hopes apps will become something we associate with all devices, not only smartphones and tablets. Windows RT – the cut-down OS that runs on ARM based tablets – will only run these Windows Store apps, so making them appeal widely is vital.

Even if you don't opt for a Surface tablet, we've seen impressive touchscreen Ultrabooks and

convertibles. All-in-one PCs are also a major focus, and the arrival of screens that slide all the way down to horizontal removes the lingering doubt about reaching out to touch a vertical display. The same full-screen Windows Store apps can run from a tablet right up to an all-in-one PC.

However, the most important element of all is cross-platform development. If you buy a Windows Store app for your laptop, it will be available on your Windows 8 tablet too. You can install apps on up to five different Windows 8 devices, as long as they are tied to your Microsoft account. Freebies and incentives have been thrown at developers to carry apps over to Windows Phone. The eventual goal is big-name apps that work on every device – and all tied to your Microsoft account in the same way that an Apple login has so much invested in it.

It's interesting to note the difference in philosophy. Where Google and Apple link app usage across phone and tablet, Microsoft has chosen to pair tablet and PC – which shows the company's desire to make Windows 8 a work-capable OS. If it can successfully push Windows Phone 8 into the mix, it will have the kind of integration that even Apple can't match.

## SECOND SCREEN

That brings us to Xbox SmartGlass. Carrying the Xbox 360 experience over to Windows tablets and phones – and, it should be pointed out, to Android and iOS – it gives you a more intuitive way to control entertainment on your console. The app turns your handheld device into a keyboard and remote control, complete with live rewind and playback gestures, and makes it easier to browse the internet on a big screen – although the shaky Internet Explorer app for Xbox won't have you throwing out your laptop. It works both ways, too, so if you purchase a film on your tablet, you can send it to the TV via an Xbox, like Apple's AirPlay.

If Microsoft's big promises are to pan out, SmartGlass will also be a contextual second-screen companion. Early demos have shown a tablet hosting an interactive map of Westeros while *Game of Thrones* plays on the big screen, and games such as Halo 4 and Dance Central 3 show stats and playlists on your mobile while you play – a concept around which Nintendo has based its new Wii U console.

**“Microsoft's advantage is integration across desktops, laptops, tablets and phones”**

There isn't a whole lot of live content of that ilk just yet, and all of this requires the Xbox to be running, so SmartGlass won't add extras to programmes watched via free to air TV or a Foxtel box. But if you already watch TV via your console – and if studios and developers embrace the app – it could challenge Twitter as the smartphone distraction of choice while watching TV.

Microsoft's Games app on Windows Phone 8 will pull in your Xbox gamer profile and friends list, and Windows Store apps have also begun to use Achievements from the console experience. It isn't flawless yet: if you





don't have a data connection you may find that your progress in an Xbox Live game vanishes until you're back in Wi-Fi range.

## CLOUD

The glue that potentially binds things together is SkyDrive. The cloud storage service is a core part of the new OS, with both a Windows Store app and integration with Windows Explorer on the desktop. A corresponding app for Windows Phone and a full web portal linked to the revamped Outlook.com mean that files are accessible everywhere with the one Microsoft login.

You get 7GB of storage for free, with additional 20GB, 50GB and 100GB tiers costing \$10, \$25 and \$50 a year, and SkyDrive's feature set is gradually growing. Recent updates have added selective folder syncing and the vital Share function, and you can open documents directly into Microsoft's Office Web Apps; these are broadly similar to Google Docs, but have better formatting and compatibility with desktop Office documents.

You can save files into SkyDrive directly from within Office, and any applications that use the Windows Explorer save dialog will offer SkyDrive in the list of locations.

Where it falls behind, however, is with third-party support: on a non-Windows device, you won't yet find many apps offering to share to SkyDrive alongside the near-universal Dropbox options. Hopefully that will change, though.

## THE MICROSOFT HOME?

Many of the approaches here are similar to those of Microsoft's rivals, but when it comes to the connected home, Microsoft has a huge head start on Apple in the form of the Xbox. Apple TV may be smaller and more stylish, and integrate with more panache, but it isn't already sitting under several million Aussie TV sets. What originally launched as a games console – and these days it's a superb one – has proved to be something of a Trojan Horse as Microsoft has continued to push features into its software. From the couch, Microsoft is hard to beat.

The other big advantage is the integration between desktops, laptops, tablets and phones; it's the only platform on which you can conceivably work seamlessly on a file across all four devices without having to deal with multiple environments and file compatibilities. You could argue that users who have invested in OS X will have Apple's productivity apps on their iOS devices, but there's no denying

Microsoft's platform is strong in this respect.

The huge question that lingers is whether people will understand how all the Microsoft parts complement one another. It's one thing selling a non-techie user an upgrade to their laptop's OS, but persuading them to switch from their beloved iPhone or their trusty Nexus 7 will prove more of a challenge.

The consistent interface design across Microsoft's devices will help to an extent, but Microsoft isn't stupid – the launch of iOS and Android versions of the SmartGlass app is an acknowledgment of the huge number of people who are quite happy with the devices they already have.

## PROS AND CONS

### Pros

- ✓ Xboxes are already in millions of homes
- ✓ Almost any PC will run Windows 8
- ✓ Apps can work from phone up to desktop

### Cons

- x The Windows Store is bare right now
- x Developer support remains uncertain



# SkyDrive®





# The mix-and-match approach

**W**e've looked at the three big-brand attempts at monopolising all of your computing needs, but for most people it isn't realistic, or even desirable, to dive fully into one camp. We've all accumulated gadgets and PCs of various makes and models over time, so starting from a blank slate is rarely an option.

Does that mean you should keep buying the same manufacturer's products to match those you already own? Or, once you get past the marketing, can the mix-and-match experience be just as smooth and well integrated?

## CHOOSING A BASE

Although starting from scratch would be nice, the reality is that most of us already own a PC or laptop. Fans on either side may disagree, but the good news is that the old Windows or Mac dilemma isn't anywhere near as difficult as it may once have been. These days, many applications work fine on both platforms, although there are still major exceptions – most notably, patchy OS X support for many new games at launch.

You might think pairing your choice of desktop OS with its mobile sibling is a must, but that doesn't apply to any great extent either. The iPhone can easily be synced with iTunes in Windows; if you use a Mac, most Android handsets include compatible third-party syncing software, and that's if you even choose to sync with a computer at all. All three mobile platforms can be set up and used on their own thanks to the cloud. Spotify and the various other cloud music services mean manually getting a music collection off a hard drive and onto a phone is no longer necessary.

There are still a few areas where the choice of OS on a laptop or PC does make a difference, though – even more so now that Windows 8 has arrived.

## OPPOSING PHILOSOPHIES

As we briefly mentioned earlier in this feature, it's interesting that Microsoft approaches device and app integration from a different direction to that of Apple and Google. Rather than focusing on the relationship between the phone and the tablet, as Android and iOS do, the various Windows 8 arms were built primarily to connect together the tablet and the PC – a decision that's opened the floodgates to the current wave of capable all-round laptop-tablet hybrid devices.

When you add the seamless transition between desktop and tablet when buying and installing Windows Store apps, it's clear a Windows 8 tablet makes a great partner to your existing PC – as long as you upgrade that to Windows 8 too. We won't even try to pretend that the Windows Store is overflowing with quality apps right now, but it's a big enough platform that we're sure developers will give it a fair crack in 2013. Hopefully, that will extend to Windows Phone 8 as well, to go along with some impressive recent handset launches.

The flipside to that is the question of app design. Many would argue that the reason behind Apple's approach

is that there's a much more natural relationship between how we use a tablet and a smartphone, and that's certainly true if your handheld devices aren't used primarily for work.

**“We've all accumulated gear over time, so starting from a blank slate is rarely an option”**

If you remove the need for an office suite and a comfortable keyboard to type on for long periods from the equation, it's hard not to lean towards the phone-tablet approach, where Angry Birds need only be purchased once for use on both of your portable devices. It's early days yet, but which approach eventually seems more natural may well depend on the take-up of Windows 8.

## CROSSING PLATFORMS

So what do you lose by mixing platforms? The manufacturers would like you to believe it's a whole list of important things, but they'd be mad to close the door on the vast numbers of consumers who are platform-agnostic.

Therefore, iTunes runs on Windows, the SkyDrive app is in the Google Play store, and you can control your Xbox with the SmartGlass app on any iOS device. You'll rarely find yourself completely locked out of an important service by choosing the other side – and if you do, third-party developers are remarkably good at coming up with apps that replicate withheld functions.

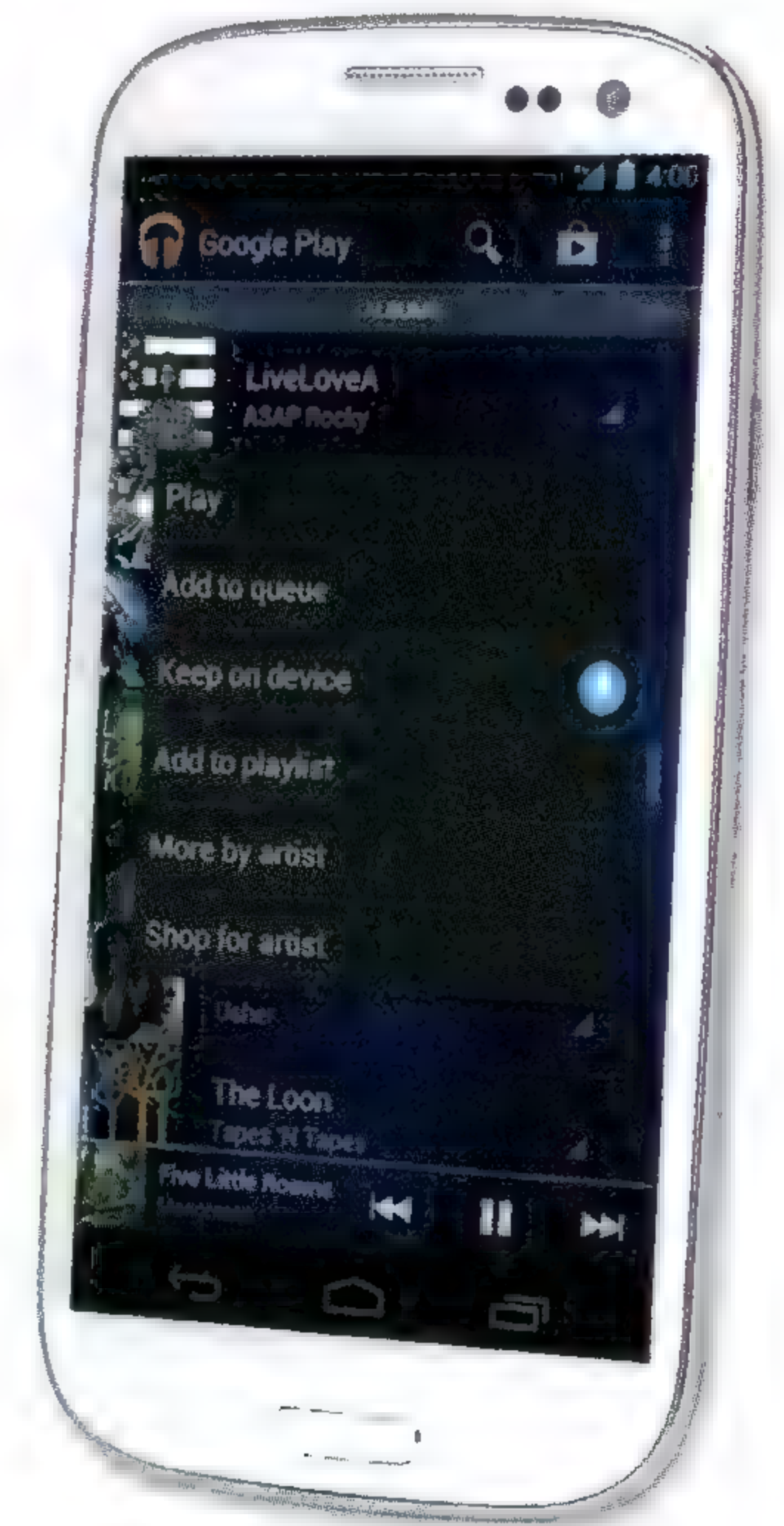
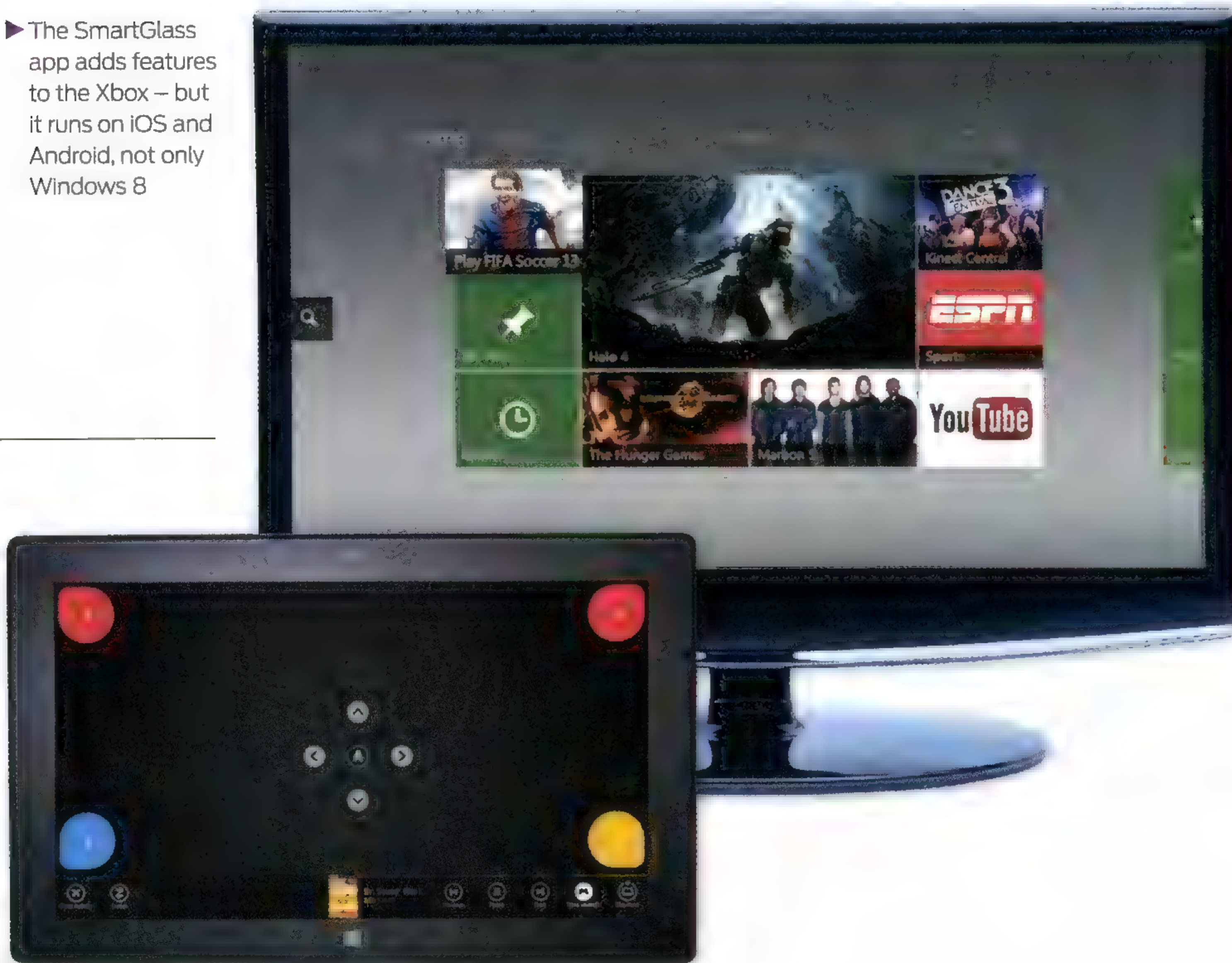
That isn't to say the cross-platform experience will always be smooth. When it eventually lands on our shores, the free Google Play Music service might appeal to iPhone owners who don't want to shell out for iTunes Match, but the best user experience comes via the native Android app. Windows and Mac users wishing to upload their music must use a basic manager utility, then access their

▼ Some applications remain native to one platform, but the number is shrinking





► The SmartGlass app adds features to the Xbox – but it runs on iOS and Android, not only Windows 8



▲ Google Play Music is available on other platforms, but is best on Android

tracks through the browser – which is also the only way iOS owners can play tracks without downloading a third-party app. On the other side, Apple's cloud music service can be accessed via iTunes on a PC, but you won't be able to use it on Android or Windows Phone handsets.

Likewise, each platform will still have its exclusives. If you're a Mac user, for example, you can pair Tweetbot across OS X and iOS, and there are all manner of calendar, note-taking and other productivity apps that only exist across the Apple platform. It may not sound like much, and there's almost always an equivalent on other platforms, but some specialist applications may swing the decision.

### THE CLOUD EFFECT

The gaps are more noticeable when you try to combine different types of device, particularly in the living room. There are tangible benefits to be had by pairing an Xbox with a Windows 8 device, most notably the integration with Xbox Music, and the same applies to Apple TV and iTunes Match.

Microsoft is working on Xbox Music apps for iOS and Android, but at the moment you'll need to buy carefully to avoid having to set up different cloud services for different devices.

Unlike in many other areas, for cloud services there's a persuasive argument that none of the big three should be your first port of call.

As much as iCloud, SkyDrive and Google Drive have their roles to play on their various platforms, they all lack the true cross-platform, multi-application support of Dropbox. All manner of third-party software has direct Dropbox integration, and it's getting an increasing foothold on Android thanks to preinstallation deals with major manufacturers and networks. Integration with iOS is more constrained, but many apps have made it a primary feature, whether it's

**“Manufacturers would be mad to close the door on all of the platform-agnostic consumers”**

syncing your passwords in 1Password or saving files in iA Writer.

That doesn't mean you should eschew the other cloud services. Having vital files mirrored across several services will ensure they're always accessible, and also make it easier should you end up falling into a pattern of buying hardware from one manufacturer more frequently than the others.

### DECISION TIME

From all of the above, it might appear that there's little to lose by mixing and matching as you shop from the

best of the big names. However, that's forgetting the one factor that always plays a bigger part than any objective analysis will consider: convenience.

It's convenient for a user to have one account that's linked to every application, song and file they own, which is why all three manufacturers have invested heavily in making their cloud services as attractive as possible. It's convenient for a user to only have to learn one interface, which is why Microsoft is hard at work making the Xbox dashboard match up with the Windows 8 Start screen.

It's also convenient (and economical) to reuse cables and cases, and to be able to reinstall a significant collection of old purchases on a new device.

Convenience is the reason that, for a long time, so many of us have used Dropbox for everything, even though newer alternatives may better fit our current needs.

It's why a lot of people will automatically upgrade to the new iPhone every two years despite a growing curiosity of what the other side might have to offer. And it's why making the right choice at the beginning is becoming more important with every new device launch.

Although you might not be able to start completely from scratch, choosing your next purchase based on the products you already have in your home has a lot of merit.





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JOE MARTO

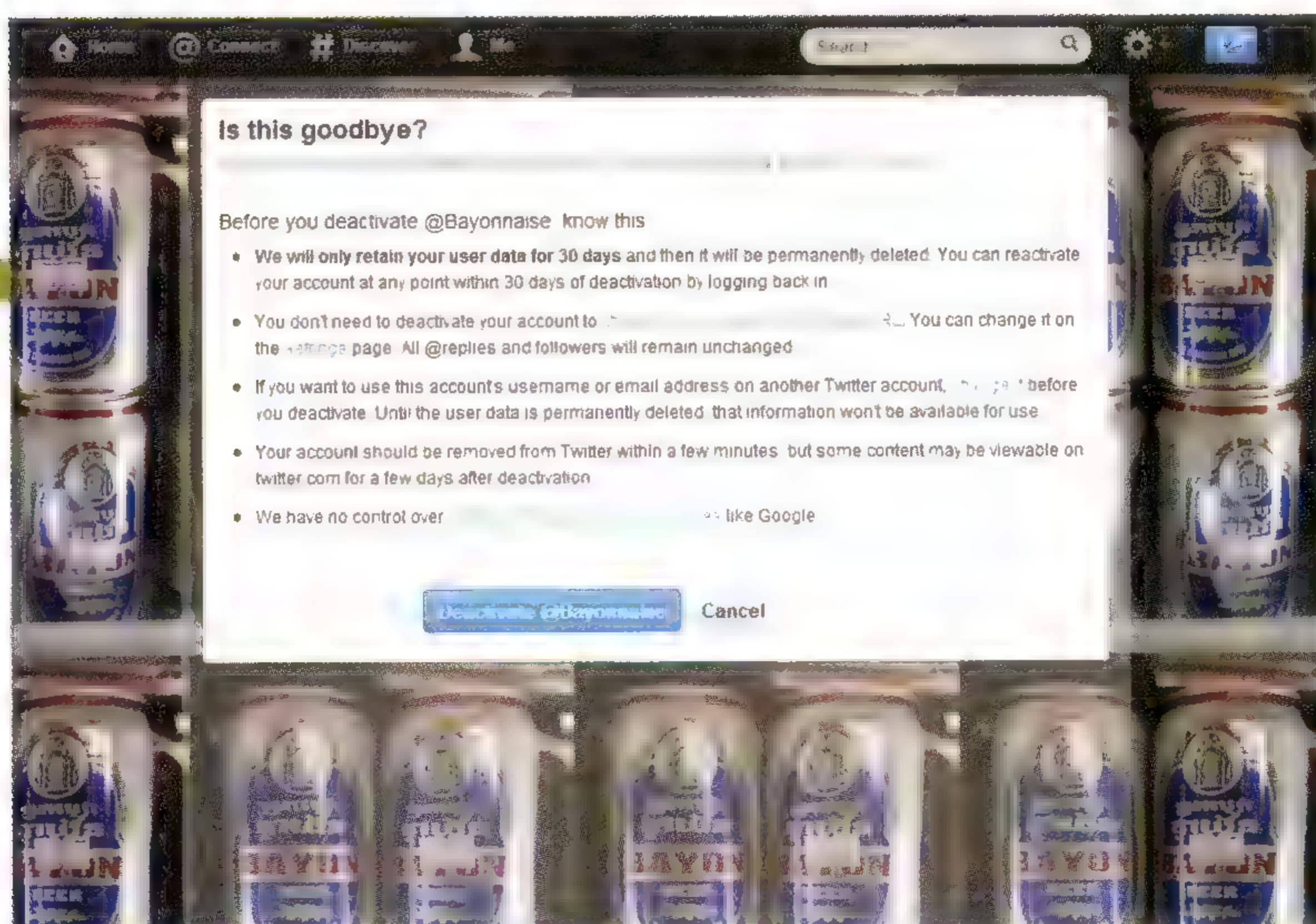
We live in an increasingly connected world, where our digital identities are replicated and spread over a thousand servers and services. For the most

part, that's no bad thing; sites such as Facebook are a great way to keep up with friends, while letting Amazon remember your address is a time-saver.

The price paid for these conveniences is high, though: we surrender our privacy and information to companies, which can then use this data as they see fit. Most, such as Facebook and Amazon, will typically use the information to send targeted advertising – which is annoying at worst. Less scrupulous services will sell on our details, or cynically manipulate us into staying subscribed for longer.

And those are the ones we know about. Ask yourself this: in all your years online, how many sites and services have you joined... then left behind as the next big thing came along? Do you remember what you posted on that music forum in 2004? Or which services you tried for webmail before Gmail? We're only human, so it's natural that we forget these services as we move on to new and better ones. The problem is, they don't forget us. And just like a drunken Friday night photo, that data can end up in places you never intended it to go.





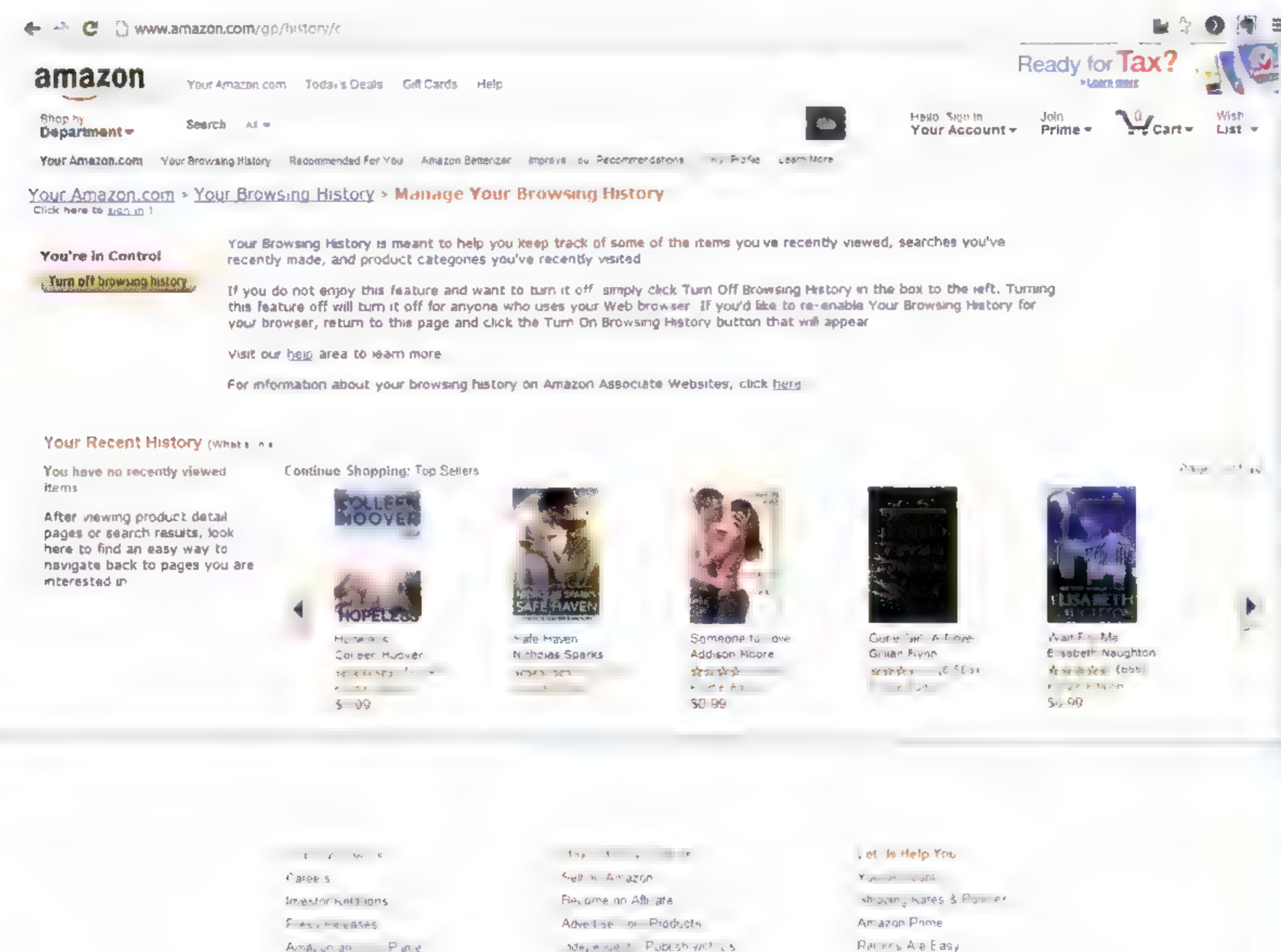
Twitter takes 30 days to delete your personal information

## PREVENTION OVER CURE

Unless you're dealing with a particularly benevolent company, there often isn't a simple way to totally remove your own data – and some will go to unusual lengths to disguise that. Facebook wouldn't let users delete their accounts until as late as 2010, for example, and even now it confuses the process by offering two options: deletion and deactivation.

The difference? A deactivated account can be tagged in photos and posts, will still receive email alerts (which have to be opted out of separately) and can be reactivated at any point. Deleting your account will overcome all of this, but it's an option buried in a labyrinth of FAQs and privacy options. You can access it more easily by visiting <http://tinyurl.com/mvem3t>, but even then the company will retain some of your personal information.

Amazon allows you to easily delete browsing history, which it uses to target advertising.



Still, Facebook is better than some of its peers. Twitter takes a month to delete your account, for example – although it's at least automated if you deactivate your account and stay signed out for 30 days. Note, Twitter claims no control over any of your tweets that have been cached by search engines.

WordPress won't let you delete your account – only your blogs and comments, all of which have to be dealt with individually, assuming you have the relevant permissions. We contacted the company to find out why it was structured this way, but received no response (see *The untouchables*, below).

For all the deletion dodging practiced by social networks, there are a few sites that offer a comparatively simple process for clearing your information, and online stores are generally the most reliable. This is probably due to

the legal scrutiny they fall under as a consequence of holding your credit card details, address details and so on.

Take Amazon, for example. The giant of online retailers may have faced criticism earlier this year over how it handles its own finances, but when it comes to your data, it offers a robust selection of options for erasing it wholesale or piecemeal. To wipe your search history and browsing data, visit <http://tinyurl.com/b5xb987>, where you can also tell Amazon not to collect this information in the future. To delete your entire account, just contact the customer services department once you've cancelled existing transactions, and a representative will handle your request personally. Easy.

What's more, deleting your Amazon account at its root allows you to break links to other sites in the Amazon network, such as Javari and Kickstarter. This isn't something that's true of other online networks such as Google, where each sub-service will be affected differently. Deleting your overall Google account will erase your Gmail to the extent that the username can't ever be reused, even by you, but any Google Groups you've joined will still be able to email you at secondary addresses, so you may need to deal with those individually.

Thankfully, there are steps you can take to ease the headache. The Google Dashboard ([www.google.com/dashboard](http://www.google.com/dashboard)) details most of the hidden information Google collects about you, linking through to the privacy policies and FAQs for each service you use. This can act as a handy checklist to follow up on once you've deleted your primary Google account, which is done at [www.google.com/settings/account](http://www.google.com/settings/account).

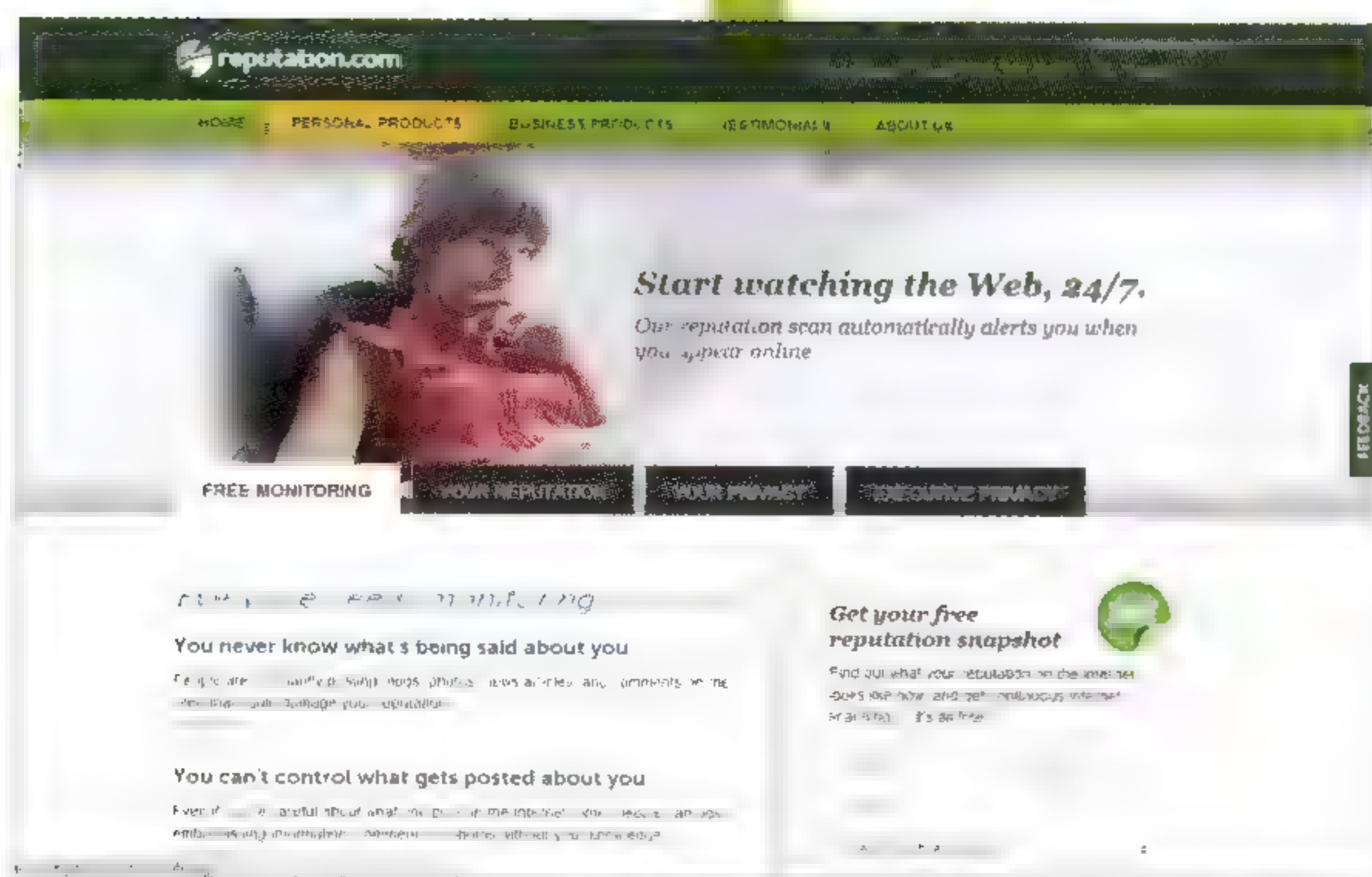
## A LITTLE HELP

The fact that Google Dashboard acts as a checklist highlights one of the biggest challenges in erasing all of your online tracks. Those who've been online for a decade or more will have lost track of all the things they've

## THE UNTOUCHABLES

Some online services, such as WordPress, Evernote and Skype, don't let you delete your accounts at all – or deactivate them. The only way you can distance yourself from them is to update them incorrectly. To do this, you'll need to set up a new free email address under a fake name – JoeBloggs123@gmail.com, for example – then update your profile details to reflect the false identity. The company will probably still have some of your old information, but at least it won't be able to use it very effectively.





signed up for, leaving a trail of idling Myspace and Friends Reunited profiles.

Tracking down these unwanted services will be tricky and tedious, but companies such as Reputation.com will help – for a price. Founded in 2006, it has become one of the largest in the field at managing the online visibility of individuals and companies. Reputation.com claims it can wipe your information from more than 3000 corporate databases and block the efforts of more than 200 companies that regularly track online behaviour. Couple that with privacy-protecting best practices, such as disabling cookies in your browser, and your online identity should be somewhat masked.

The company claims it can also deal with more personal problems. Typically, these services are used by companies that want to combat fake reviews and bury damning articles, but they're also available to individuals who want to change how they appear online – if they want to appear at all.

"We focus first on removing the data you want protected from sites that expose it, through a combination of partnerships and technology," says Noah Lang, VP of business development at Reputation.com. "Our technology then monitors for the data you've protected and, if it resurfaces, we remove it. We also monitor for new sites that may expose personal data online and alert our users if their data appears."

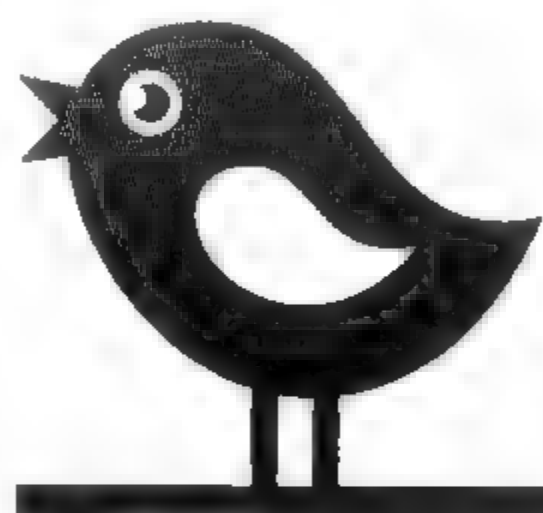
Reputation-management companies have drawn criticism over the years for their rates and methods, but they claim their exclusive partnerships with personal data aggregators allow them to achieve a lot in a short time.

In fact, rather than large, data-collecting corporations, it's often personal sites that pose a problem for reputation-management services. If your ex-partner has written an embarrassing blog post about you, all you can really do is send a cease-and-desist letter in the hope of

Services such as Reputation.com help to track down all information about you online

scaring them into submission – and you can do that yourself. Sites such as ChillingEffects.org offer advice on online privacy, as well as templates for formatting and sending your own cease-and-desists to webmasters.

The trouble is that a cease-and-desist letter is usually used as a scare tactic – a formalised threat of legal action should the recipient continue posting objectionable content. It isn't legally enforceable (that's the difference between a cease-and-desist order, which is issued by a court of law, and a cease-and-desist letter, which anyone can send), and if someone calls your bluff then your only recourse is to pursue full legal action. This won't only prove expensive, but will probably be unsuccessful too. There have been some famous successes, like a Melbourne man who recently sued Google for defamation over its refusal to remove an image of him



## "It's often personal sites that pose a problem for reputation-management services"

with a known criminal identity from its search results. But such an endeavour is restricted to those willing to gamble big legal fees on victory.

Worse still, cease-and-desist letters can often serve to create the opposite effect to that intended and attract attention to the data you're trying to hide. It's a phenomenon popularly known as the Streisand effect, after the singer tried to have a photo of her house removed from a website, inadvertently prompting a publicity storm that proved far more intrusive

▼ Deactivating Facebook won't completely remove you from the site



than the original image. It's the reason many reputation-management services prefer to use search-engine manipulation to bury unwanted data, rather than trying to delete it directly.

Even paying to hide your data instead of destroying it can have ironic twists. After all, you're handing your data to one online service in the hope of combating another – a notion that plays into the cyclical, self-perpetuating nature of the internet. It's a fact that also hints at the sad truth of any endeavour to destroy your virtual identity: your data ultimately isn't your own, and as long as you're even vaguely participating in society, you'll never be able to vanish completely.

## FACEBOOK PRIVACY

Of all the companies that collect your personal data, Facebook is probably the biggest, and even if you aren't ready to delete your account, managing your privacy is still vital.

"We typically advise users to 'lock down' their Facebook accounts entirely from public view," says Reputation.com's Noah Lang. "This includes controlling past posts, since Facebook doesn't apply privacy choices to past posts, and indexing for search engines."

To do all this, you'll need to navigate Facebook's maze of menus and deliberately separate Account and Privacy controls, both of which can be accessed using the dropdown menu in the top-right corner. Here, you should set your default post visibility to either only your friends or a custom-made list of people you trust, and using the Past Post option will uniformly limit the visibility of previous posts and content to friends only.

To prevent Google from seeing your Facebook profile, disable Public Search within the Apps, Games and Websites sub-section, where you should also turn off instant personalisation if the option is available in your region.

Search engines aren't the only method through which people will find you, however. It's worth adjusting your How You Connect settings, too, also located on the Privacy page. This enables you to limit how people search for you even on Facebook, as well as blocking messages and requests from anyone who isn't a friend of a friend.



# THE LABS

YOU WON'T FIND  
BETTER REVIEWS  
ANYWHERE  
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## The dead zone

**DAVID HOLLINGWORTH** REFLECTS ON AN ODDLY QUIET TIME OF THE YEAR, WHICH GIVES HIM TIME TO PONDER A LOT OF HARDWARE.

In some ways, the timing of the merger between *Atomic* and *PC & Tech Authority* has come at a bit of an odd time in the gaming calendar. Post-Christmas, game releases tend to drop off markedly, so while it would be great to have our second merged issue full to the brim with shiny and exciting games...

\*tumbleweeds\*

The thing is, this period is now one of the few truly quiet times of the year. It's a chance to catch your breath before the second quarter rears its ugly, pixelated head and we're swamped with games that have been pushed out of the end of the year to avoid competing with *Call of Duty*.

But that does give us time to look at another side of the *Atomic* equation - great PC hardware!

Everyone in PCB-land (motherboard makers, video card makers, and so on) also seem to be holding their breath. With new generation cards expected from both AMD and Intel some time soon, it's no wonder, and the only-recently relentless march of motherboard releases has gotten positively glacial. Peripheral makers, however, are still working hard to separate gamers and PC enthusiasts from their hard-earned with gay abandon.

In fact, the mouse space in particular is more crowded now than ever. Traditionally, it's been the domain

of dedicated controller makers like Razer or SteelSeries, or larger outfits like Microsoft (oh, the SideWinder series - we miss you) and Logitech. But recently a lot of peripheral makers have made serious in-roads.

Corsair has bought entire companies and hired a mess of ex-Logitech staff to get its mouse and keyboard business off the ground, with so far great results. Case-maker ThermalTake has spun off its own new brand, Tt eSports, targetting the pro-gamer crowd, and Cooler Master has opened up its CM Storm division. In this issue, Thermalright's joined the fray, too - though with less spectacular results, as you'll soon see.

Meanwhile, you've got folks like Razer and NVIDIA getting into the system business. Razer's Blade laptop has already wowed us, and you can catch up with our initial impressions on the CES-announced Razer Edge in a few pages. Long story short, it's a gaming tablet that's gotten us quite excited. NVIDIA's Shield handheld is possibly even more ambitious.

So, yeah. This month, all about the gaming peripherals, not to mention excellent round-up of security software, and the very impressive new iMac, a system we'd not say no to if it insisted on taking up space on our desk.

Now, if you'll excuse me, I'll be waiting for *Crisis 3* to release...

**DAVID HOLLINGWORTH**

is our Managing Editor. In between reviewing games and hardware, he looks after *PC & Tech Authority's* website and social feeds.



### WHAT OUR A-LIST MEANS

Our A-List award is reserved for the best products in each category we review. With a winner and an alternative pick in each, that's 92 products you know are first class.



### WHAT OUR AWARDS MEAN

*PC & Tech Authority's* comprehensive Real World testing sorts out the best products from the pack. Any product recommended by *PC & Tech Authority* is well above average for features, value for money and performance.



### WHAT OUR RATINGS MEAN

★★★★★★	OUTSTANDING
★★★★★	VERY GOOD
★★★★	GOOD
★★★	ORDINARY
★★	POOR
★	VERY POOR



# HOW WE TEST



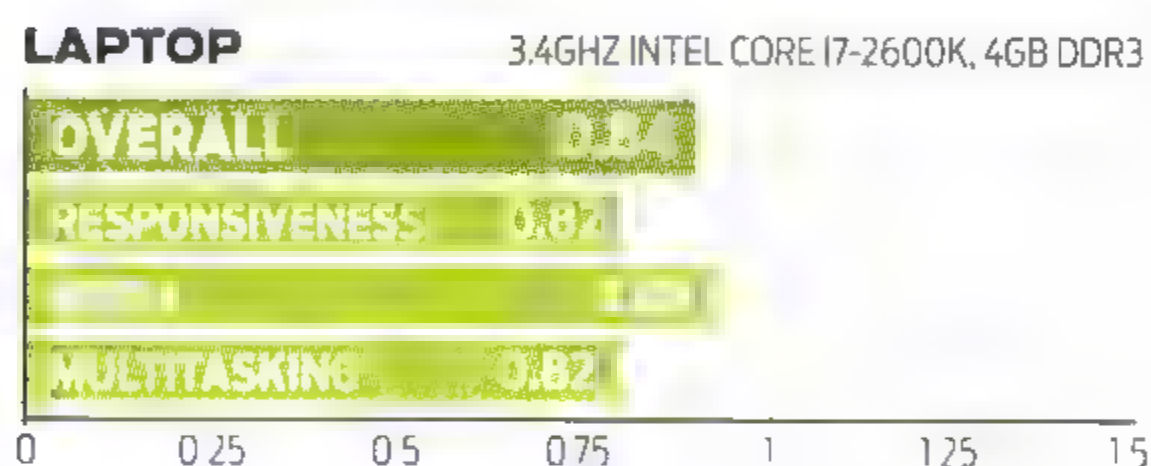
OUR BENCHMARKING TESTS ARE THE BEST IN THE BUSINESS. READ ON TO FIND HOW THEY WORK...

## 2D TESTS

We test desktop PCs, netbooks and laptops with our own, custom-built, 2011 Real World Benchmarks.

We split the results into three categories: Responsiveness, Media and Multitasking, with the Overall score an average of the three sub-scores.

For instance, responsiveness replicates light browser and productivity workloads. The Media test involves running iTunes for audio conversion, Photoshop CS5 to crunch large images and Sony Vegas 10 to edit home video. This then gets run simultaneously alongside Cinebench 11 in order to get a handle on the multitasking ability of the system.



## 3D TESTS

We use pre-recorded demos in Crysis and DIRT 3 to test gaming performance where relevant. We have three standard test settings, depending on the power of the graphics card: Low, Medium and High.

To test gaming performance, we use our own recorded Crysis benchmark. We use the Low, Medium and High quality settings in 1366 x 768, 1600 x 900 and 1920 x 1080 screen modes respectively. Very high-end systems can also be tested using the ultra-intensive Very High settings, with all detail switched on, and varying levels of anti-aliasing enabled.



## LAPTOP BATTERY LIFE

We subject laptops to two battery tests. In the light-use test, we optimise the system settings for the greatest power efficiency. We then disconnect the mains and run a script scrolling a selection of web pages until the system shuts down, giving you a realistic idea of the surfing time each laptop offers.

For the heavy-use test, we engage Windows' High Performance power profile, set the display brightness to maximum, and allow the taxing Cinebench 3D renderer to push the processor load to the limit. This gives a worst-case figure, revealing how long you can expect the battery to last under the most demanding conditions.



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# APPLE IMAC 21.5IN

AN ATTRACTIVE NEW DESIGN AND A HOST OF SMALL IMPROVEMENTS COMBINE TO MAKE A STUNNING ALL-IN-ONE; IT'S APPLE'S BEST IMAC SO FAR

**PRICE** \$2478  
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**A** process of constant refinement has established the iMac as the best-looking desktop PC around.

Viewed head-on, you might wonder what Apple's changed with this year's model. Peer around the side, however, and it quickly becomes apparent: the 25mm edge of the previous-generation machine has been whittled down to an astonishing 5mm. The iMac isn't this thin across the whole width of the chassis. It bulges to a more accommodating 40mm in the centre where all the components are housed, but it still makes a considerable difference to the way this all-in-one looks. Approach it from an angle and it seems to float above the desk, suspended in midair.

Interestingly, Apple says this newer, sleeker iMac can't be manufactured

using the old methods, so it now uses a technique called "friction-stir welding" to join the metal section below the screen to the rear panel.

Fancy production techniques aside, though, most of the rest of the design is familiar territory. The screen is still surrounded by a glossy black border, the silver "chin" houses the familiar Apple logo and the curved stand looks as good as ever. Build quality remains sturdy, despite the trimmer profile.

All the connections are located at the back of the screen – there are four USB 3 ports, two Thunderbolt connectors, a Gigabit Ethernet socket and a headphone jack. There's no room on the side for the SD card slot or an optical drive, however, so the former has been moved to the rear and the latter has been removed entirely.

## WHAT'S INSIDE?

This upgrade isn't merely superficial. Inside, Apple has made major

alterations, principally to the iMac's storage subsystem. Instead of just a hard disk or SSD, there's the option to specify Apple's new Fusion Drive. This combines a 128GB SSD and hard disk to provide the best of both worlds – the speed and responsiveness of an SSD and the high capacity of a hard disk.

The idea is to store frequently used applications and files on the SSD for improved responsiveness, while keeping less critical data on the slower, platter-based hard disk. As you might expect, the operating system resides permanently on the SSD, and a selection of key applications is placed there, too, including Safari, iMovie, iCal and iPhoto. Over time, this changes as the system learns which apps and files you use most often, moving them to the SSD, and moving those that are rarely used back to the hard disk. (Note, however, that the benefits of the Fusion Drive aren't available to those who install Windows via Boot Camp – that's installed on the hard disk portion of the drive.)

The effectiveness of the system will only become apparent with prolonged use, but we can say categorically that the underlying hardware is excellent.

The iMac boots quickly, taking 15 seconds to reach the desktop, and the 128GB SSD is rapid. It scored 481MB/sec and 330MB/sec in AS SSD's sequential



## KEY SPECS

3.1GHz Intel Core i7-3770S • 16GB DDR3 RAM • 128GB SSD • 1TB hard disk • Nvidia GeForce GT 650M graphics • 21.5in 1920 x 1080 LCD • 4 x USB 3 • 2 x Thunderbolt • dual-band 802.11abgn Wi-Fi • Gigabit Ethernet • 1mp webcam • SD card reader • Apple OS X Mountain Lion • 1yr RTB warranty • 528 x 175 x 450mm (WDH)

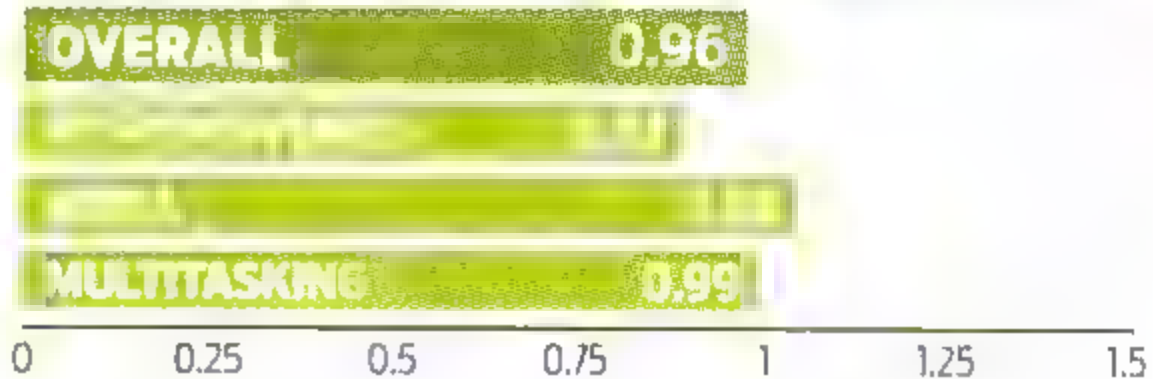


## 3D SPEED

GOOD PLAYABLE UNPLAYABLE

VERY HIGH SETTINGS	20FPS
HIGH SETTINGS	33FPS
MEDIUM SETTINGS	70FPS

## BENCHMARKS 3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1



read and write tests – not much slower than the 497MB/sec and 340MB/sec achieved by a PC-based SSD like the Samsung SSD 830.

Apple also boasts that the 1920 x 1080 IPS display is “75% less reflective” than last year’s model. That’s a pretty meaningless statistic, but there have certainly been design changes. The glass front is now laminated to the LCD underneath, eliminating a small 2mm gap, and the anti-reflective coating has been altered. To our eyes, it’s an improvement over previous models, although it still catches more reflections than a traditional, matte-finished monitor.

Regardless of reflectivity, the screen quality is outstanding. The brightness level of 469cd/m<sup>2</sup> outshines the competition and the contrast ratio of 1024:1 is simply superb. Apple colour-calibrates all its panels at the factory, so we weren’t surprised to discover colour accuracy was top-notch. With exceedingly broad viewing angles and no backlight bleed, it’s a dream of a screen that’s equally at home with colour-accurate photo editing and professional video applications as it is with displaying movies.

Even audio has been given an overhaul, with high- and mid-range notes from the slim speaker ports along the bottom edge sounding impressively airy, clear and full-bodied. They’re fine if you only listen to acoustic and choral music, but beware – there’s no bass at all.

## PROCESSOR AND GRAPHICS

As usual, Nvidia provides the GPU, and the part in question is a GeForce GT 650M – a mobile chip based on Nvidia’s latest desktop cards. It scored 33fps in our 1920 x 1080 High quality Crysis test – which is better than the 7fps of the integrated HD 4000 graphics in Sony’s Vaio Tap 20, and shows there’s enough power to ensure the iMac is a strong option for a gaming machine.

It’s accompanied by an Ivy Bridge

► Apple’s design team has been hard at work shaving millimetres off the chassis of the already svelte iMac. The new model’s edge is now only 5mm thick

processor – in this case, the low-power, quad-core Intel 3.1GHz Core i7-3770S. Aided by 16GB of RAM, this cruised through our benchmarks with a score of 0.96 – the second-fastest result we’ve ever seen from an all-in-one, and outpacing the 0.63 of the Sony and its Core i5 chip.

Our concern here isn’t speed, though, but heat. With all the components so tightly packed and only one internal fan, the new iMac can become toasty inside.

We stress-tested the system in Windows 7 and OS X and recorded peak temperatures of 100°C and 98°C under full load. The system never became unstable, and we don’t expect people to run the CPU at 100% load constantly, but it’s a concern.

## VERDICT

Fusion Drive, “friction-stir welding” and all the latest components clearly



don’t come cheap, with the review iMac costing a hefty \$2478. This is a lot to pay for a mere 21.5in all-in-one, but it’s possible to drop the price to a far cheaper \$1429 by losing the Fusion drive, specifying a slower but still perfectly adequate Core i5 processor, less RAM and a marginally less beefy Nvidia GeForce GT 640M.

Unfortunately, you lose the fast storage performance in the process, but with a display this good and a much faster graphics card, we’d still choose this over most pricier, Windows 8-based models.

**Mike Jennings**

PERFORMANCE



FEATURES &amp; DESIGN



VALUE FOR MONEY



OVERALL







## NEXUS 4

LG AND GOOGLE COMBINE TO PRODUCE THE BEST NEXUS PHONE YET, AND AT A GREAT PRICE, TOO

**PRICE** \$349 (8GB); \$399 (16GB)  
**SUPPLIER** play.google.com

**G**oogle's Nexus 4 smartphone attracted worldwide attention when it was first unveiled, selling out in a staggering 15 minutes. We've never seen a smartphone sell out so quickly, but there are good reasons why so many were so keen to get their hands on Google's latest handset.

The 8GB and 16GB versions are available outright for only \$349 and \$399, which makes the Nexus 4 more affordable than every one of its flagship rivals, including the Samsung Galaxy S II and A-Listed HTC One X.

The software is a big draw, too; as with other Google-branded handsets, the Nexus 4 is loaded with the latest version of Android, and it will get future OS updates before other phones.

The version of Android in question is 4.2, and it boasts a number of enhancements over 4.1. To start with, the lockscreen is more versatile. You can swipe up to unlock the phone, but also swipe right to go to the camera app, or left to reveal six customisable and interactive lockscreens.

Notifications can now be acted on directly: single taps return missed calls, open the text-messaging and email apps, and accept Facebook friend requests. Swipe down with two fingers instead of one from the top of the screen and a quick settings menu opens, instead of the notification drawer. It's a smart way of accessing commonly used options.

Google Now digs up more information than before, using email data to remind you about flights, restaurant reservations and local events or places of interest. The keyboard is new, boasting efficient, Swype-style gesture typing.

Thoughtful touches abound elsewhere. Triple-tapping activates a screen zoom feature. Instagram-style filters can be applied to pictures, with a finger-drag generating a before-and-after, split-field view. The camera app has been redesigned, with the settings listed in a circular menu, and the added ability to capture panorama-style 360-degree pictures.

It's the best version of Android so far, and better still it's running on a



### KEY SPECS

Quad-core 1.5GHz Snapdragon S4 Pro • 2GB RAM • 8GB/16GB storage • 4.7in 768 x 1280 IPS display • quad-band GSM/GPRS/EDGE/3G/HSDPA • Bluetooth 4 • dual-band 802.11n Wi-Fi • 8mp stills • 1080p video • 2100mAh battery • Android 4.2.1 • 1yr RTB warranty • 134 x 68 x 9.1mm (WDH) • 139g

PERFORMANCE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

▲ There's no microSD slot to expand the memory on the Nexus 4

very attractive handset. Built by LG, the Nexus 4 is smart and understated, with a glass rear that shimmers beautifully in the right light and a classy Gorilla Glass front panel.

It's well built, comfortable to hold, and at 9.1mm only marginally thicker than the 8.6mm Galaxy S III. It's more attractive than the S III, but less practical: the battery can't be replaced, and there's no microSD slot. There's no 4G version yet, either.

The Nexus 4 marks the smartphone debut of the Snapdragon S4 Pro CPU, and here this 1.5GHz, quad-core chip is partnered with an Adreno 320 graphics core and 2GB of RAM.

That's a killer line-up, and in benchmarks it kept up with the Galaxy S III. It scored 2082 in Geekbench, surpassing the Samsung's 1782, but took 1902ms to finish the SunSpider benchmark, slower than the Galaxy S III's 1344ms. In real-world use that translates to smooth, responsive navigation and web browsing, while demanding games play flawlessly. Both phones finished our 24-hour battery test with 60% remaining, which is average for a smartphone of this ilk.

The IPS screen is a stunner, too. At 4.7in, it's fractionally smaller than the Samsung's 4.8in panel, but at 768 x 1280 it has a slightly higher resolution. It's pin-sharp, and a measured maximum brightness of 486cd/m<sup>2</sup> means it's incandescent indoors and easily visible outside.

The Nexus 4's single weakness is its 8-megapixel camera. It's fine for taking standard snaps, and excellent when shooting close-ups, but the Samsung's sensational shooter is better.

It's a close-run thing between the Nexus 4 and the Samsung Galaxy S III, with the camera the only real area where the Samsung pulls ahead. When it comes to performance, build quality and screen, both phones are superb.

Which you choose depends on your priorities. If you're keen on getting the latest, cleanest version of Android, or you're a prepaid aficionado, plump for the Nexus 4. The \$399 outright price for the 16GB model is a steal.

With most people buying on contract, though, the Samsung and HTC options are still a touch ahead. The One X remains our A-List choice by a whisker.

**Mike Jennings**





◀ Built-in 3G and Wi-Fi make the Samsung an ideal companion for the travelling photographer, as you can upload photos on the move



# SAMSUNG GALAXY CAMERA

THE BEST PARTS OF A CAMERA AND SMARTPHONE COMBINED MAKE THIS A COMPELLING CHOICE

**PRICE** \$599

**SUPPLIER** [www.samsung.com.au](http://www.samsung.com.au)

**M**ost cameras use proprietary firmware, but Samsung's latest snapper bucks the trend by running Android 4.1 instead. With a huge 4.8in touchscreen on the rear, that means that as well as taking great pictures, it can run any phone app downloaded from Google Play or Samsung's own app store.

The size of the screen means it's larger than your average compact camera, but it's comfortable to hold, and despite the comparative lack of physical buttons (there are only power, shutter-release and zoom controls) the Galaxy Camera is intuitive to use. Rather than attempting to imitate a standard camera-button layout on the large screen, Samsung has bet the farm on a radical reimagining that sets all of the controls on virtual tumblers, reminiscent of SLR lens rings.

Each provides live feedback, so spinning through aperture, sensitivity or exposure compensation settings adjusts the onscreen display in real time. That's great news for beginners who need a little encouragement – and assistance – to step away from auto mode.

There's a range of built-in apps, including a tailored edition of Instagram, and video-editing software to trim and splice the 1080p footage that the Galaxy Camera records. Plus you get 3.87GB of integrated memory for installing your own apps and storing photos. You can supplement that storage with microSD memory, but take care when popping the card

into the camera – right next to the microSD slot is a micro-SIM card slot and they look very similar.

Network connectivity is required to fully exploit Android's features, and to this end the Galaxy Camera has both 3G and Wi-Fi radios. Alas, you can't make phone calls, but you can use the Galaxy Camera to check your email and browse the web on the move.

Of greater interest to the travelling photographer is the option to upload photos, share them directly on social networks and, crucially, back them up remotely. To help with this, the Galaxy Camera is bundled with a two-year, 50GB Dropbox account. Pair the two and your camera will automatically upload every shot and video as it's captured, so when you get back to your PC they'll already be waiting in the synchronised folder. In an area with poor 3G coverage full-resolution images appear in a Dropbox folder 41 seconds after being shot. That's slow, but as it happens in the background, not unusably so. Ultimately the upload rate is going to be determined by the speed of the Galaxy Camera's 3G or Wi-Fi connection.

There's plenty of clever stuff going on here, but it's good to see that Samsung hasn't neglected the camera hardware. The device has a 16-megapixel, 1/2.3in backside-illuminated sensor and this is served by a 21x zoom, equivalent to 23-483mm on a 35mm camera. The maximum aperture ranges from f/2.8 at wide angle to f/5.9 at full telephoto. Shutter speeds in auto mode go from 1/8 to 1/2000 of a second, and if you switch to manual you can push the

maximum exposure as far as 16 seconds. Sensitivity ranges from ISO 100 through to 3200.

It can't quite hold its own when compared with a traditional camera of a similar price, such as the Canon PowerShot S110 (see p48), which sacrifices resolution and zoom in favour of a larger sensor, a brighter lens (at the wide-angle end) and greater shooting flexibility.

However, the results are unlikely to disappoint in day-to-day use. Colours are accurate, and although there is softness in the corners of the frame, images are generally sharp. Macro mode only gets you to within 10cm of your subject, but the depth of field is impressively narrow, and the creamy blur surrounding the subject is even and attractive.

Even at the top of the ISO scale the results – while exhibiting grain – are never sufficiently noisy to suffer from serious loss of detail. If you need to refine the default sensitivity settings,



▲ Samsung's clever interface makes adjusting aperture, shutter speed and other settings a breeze

exposure compensation stretches two stops in either direction, in increments of 1/3EV. Video quality is high, too, and the image stabilisation is effective, even at full telephoto. There's evidence of chromatic aberration, though.

The danger with such an outlandish device was always that the camera would take a back seat to the touchscreen and Android UI.

However, Samsung has pulled off the combination with impressively fine judgement. It's very much a competent pocket snapper with the added bonus of smartphone-style internet connectivity thrown in, rather than the other way around, and on that basis it just about justifies the high price.

**Nik Rawlinson**

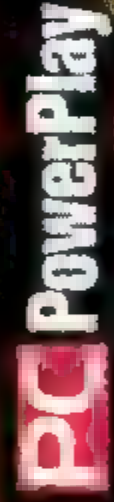
## KEY SPECS

16mp 1/2.3in sensor • 4.8in 1280 x 800 LCD • 23-483mm f/2.8-5.9 lens • Wi-Fi • 3G • microSD • Android 4.1 • 1yr RTB warranty • 129 x 19 x 71mm (WDH) • 300g

IMAGE QUALITY ★★★★★  
FEATURES&DESIGN ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★





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# GIGABYTE U2442F

AN EXCELLENT ULTRABOOK OPTION FOR POWER USERS, FROM A VERY UNLIKELY SOURCE.

**PRICE** \$1500

**SUPPLIER** [www.gigabyte.com.au](http://www.gigabyte.com.au)

**W**hen it comes to laptop manufacturers, Gigabyte has never really managed to shine. We have had concerns in the past with build quality, and most of the time its products compared poorly to similarly priced competition. With this in mind, we have been pleasantly surprised by its latest Ultrabook, which pairs an excellent featureset with decent build quality.

Inside this Windows 8 Ultrabook sits a Core i7-3517U processor, 8GB of RAM, 128GB SSD and 750GB HDD. It also has packs an Nvidia GeForce GT 650M GPU with 2GB of VRAM, which is still a rarity in the Ultrabook space. The lid is made from brushed Aluminium, and houses a 14in 1600 x 900 resolution screen. It has a respectable amount of expandability thanks to an SD-card reader, Gigabit Ethernet, D-Sub, HDMI, audio jacks, two USB 2 and two USB 3 ports

The U2442F is constructed from a rigid plastic, much like some of Sony's Vaio Ultrabooks, but don't let that dissuade you. It feels surprisingly solid, and we didn't have any issues with cooling, thanks to two vents located at the rear of the chassis. The backlit scabble tile keyboard is pleasant to type on, and the slightly textured touchpad is comfortable and responsive. Unlike some models we've seen in the past, this chassis is pleasant on the eye and doesn't feel in the least bit flimsy. The Aluminium lid also keeps the screen from having too much flex, and the hinges are reassuringly solid.

Despite the sheer grunt packed into the U2442F, it still manages to fit into Intel's Ultrabook definition. At its thickest point it measures 21mm,

▼ The U2442F has a solid number of expansion ports available

and even with the 750GB hard disk it weighs a mere 1.69kg. It isn't the thinnest or the slickest Ultrabook chassis out there, but it is quite a pleasant-looking design (something that hasn't really applied to Gigabyte's previous laptops) and the computing power and extensibility more than make up for any shortcomings in style.

Thankfully, the U2442F didn't just impress on paper, it delivered some very solid benchmark results as well. In our real world tests the Core i7-3517U drove it to an overall score of 0.66, and this was played out in the subscores as well. This puts it on par with other laptops using the same CPU, such as Dell's XPS 14 and ASUS' Zenbook UX32A.

Where it really pulls ahead of the competition is in the gaming stakes, with the GT 650M leading to crisis results of 42fps at medium detail and 26fps at high detail. With some minor tweaks to high detail this would be perfectly playable, and overall this is a truly excellent little gaming machine, with a portability that belies its power. It is also refreshing to see a reasonably priced gaming laptop that is actually portable, rather than the hefty, angular plastic wedges that we see from companies like MSI and ASUS.

One area where the U2442F did fall down was battery life. While we saw it deliver just over two hours in our heavy use tests, its light use test of four hours and 54 minutes was well below other Ultrabooks. That said, it was still noticeably higher than what we expect from gaming laptops, which was a pleasant surprise. We also noted that, when unplugged, the U2442F had the kind of aggressive power management that wanted to turn down the screen backlight regardless of what we did with Window's power settings – we've seen this before and while it does help with battery endurance, it can get annoying.



## KEY SPECS

Core i7 3715U • 2GB  
GeForce GT650M •  
8GB DDR3 • 1600 x  
900 14in LED screen •  
128GB SSD • 750GB  
5400rpm HDD •  
802.11b/g/n •  
Bluetooth 4 • 2 x USB 2  
• 2 x USB 3 • D-Sub •  
HDMI • SD Card reader  
• 339 x 233 x 21mm  
(WDH) • 1.69kg

Call us surprised, but the U2442F is hands-down the best laptop we have seen Gigabyte produce. Not only does it have remarkably solid build quality, but it has one of the best all-round feature sets that we have seen on an Ultrabook. It runs Windows 8, but your money goes towards things traditional PC users want, like storage and memory capacity as well as GPU grunt, rather than transformable touchscreens and other 'Windows 8' fanciness.

Not only is the U2442F a great performer for the pricetag, but it feels like it could be the start of the company becoming a serious player in an area in which it has always been second rate, and focused on gimmicks over functionality and performance.

**John Gillooly**

## 3D SPEED

■ GOOD ■ PLAYABLE ■ UNPLAYABLE

HIGH SETTINGS	26FPS
MEDIUM SETTINGS	42FPS
LOW SETTINGS	62FPS

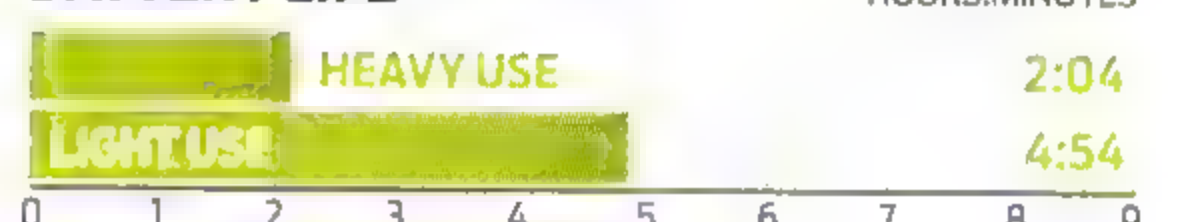
## LAPTOP

3.46GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1



## BATTERY LIFE

HOURS:MINUTES



## PERFORMANCE

## FEATURES&DESIGN

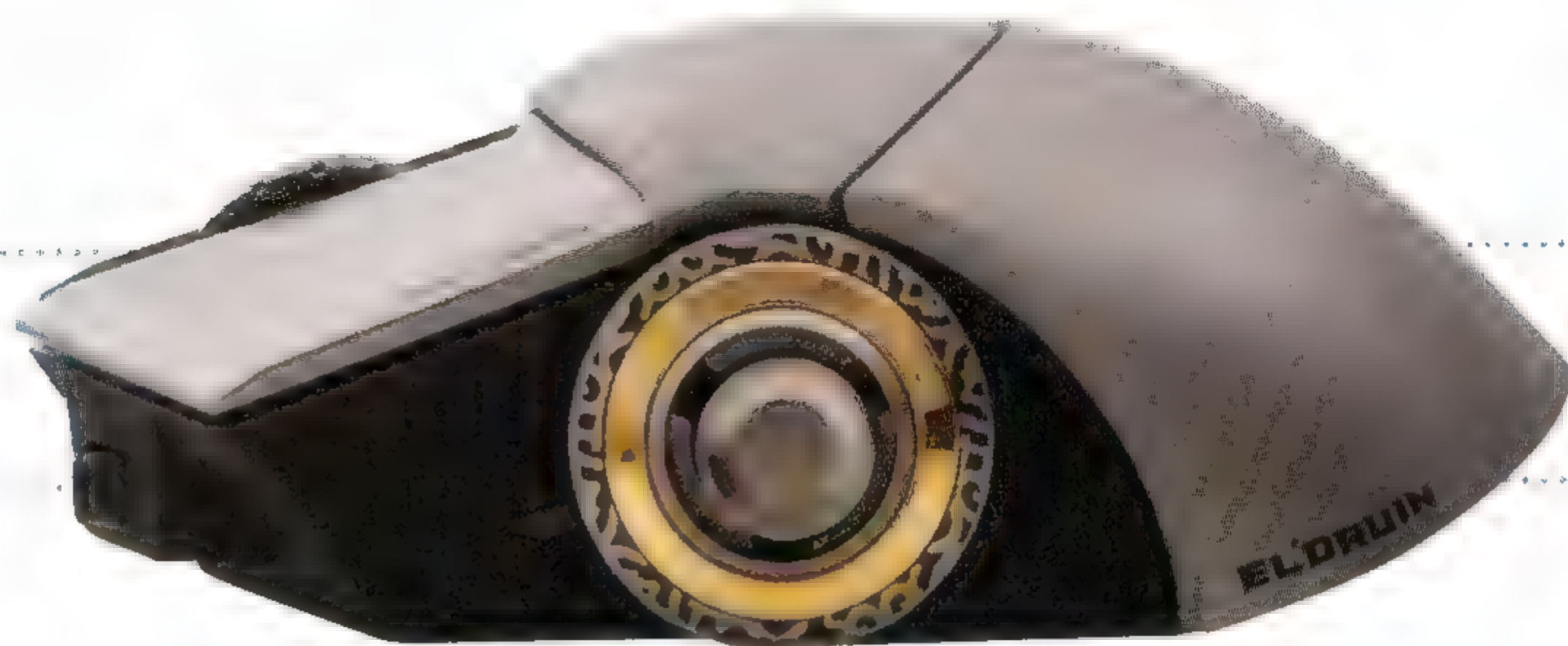
## VALUE FOR MONEY

## OVERALL





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**PRICE** \$89.95

**SUPPLIER** [www.leetgion.com](http://www.leetgion.com)

Ideally, as a hardware reviewer, it behoves one to spend a good amount of real-world time using, analysing, and getting to know any new piece of kit. In the case of a gaming mouse, that means a lot of gaming, in a variety of genres, and pootling about the general desktop environment. Ideally, this takes place over a matter of weeks, so you can really see what a new mouse brings – or takes away – from your gaming.

Alternately, in the case of the Leetgion El'Druin, you plug it in, try to play anything, and promptly replace the mouse so fast you're almost leaving comedy-grade mouse-shaped dust-clouds in its rapidly departing wake.

Leetgion is the new peripherals arm of cooler maker Thermalright, and the El'Druin is a mouse designed for ARPGs – in other words, Diablo and

## KEY SPECS

up to 5000dpi • 12x programmable keys • thumb-pad control • 2m cable • 120gm.

similar games. Its aim is to provide a five-way thumb switch that has enough dexterity to let you easily use all your skills in any given game. This SPAD (for Skill Power Action D-pad) sits on the mouse's left-hand side, while another button, for switching profiles, sits on the opposite right side. This last button also features a scrolling wheel for profile switching. The mouse also features two LED lights to help you track profiles and other tuning modes.

In practice, while the switchable backplates mean it is very comfy to hold, the button arrangement is torturously uncomfortable. Using either side button requires you to grasp the mouse so tightly that you either press the opposite button by mistake, or need to change your grip entirely. This, of course, is assuming you're not already one of those mouse users who grips their controller via thumb and outer fingers – grip the El'Druin like that and your gaming session will become a tragedy of ill-timed button activations

and frustration. Even the SPAD is near-impossible to use, as any forward or backward pressure requires such force that the entire mouse skews, thus also moving your cursor and whatever else you might be controlling at the time.

Then there's the plain mystifying choice to place one of the LED mode lights in a position where it cannot be seen while in actual use. Or the decision to make two of the four indicator colours Blue and Light Blue, which are pretty hard to tell apart without some serious staring.

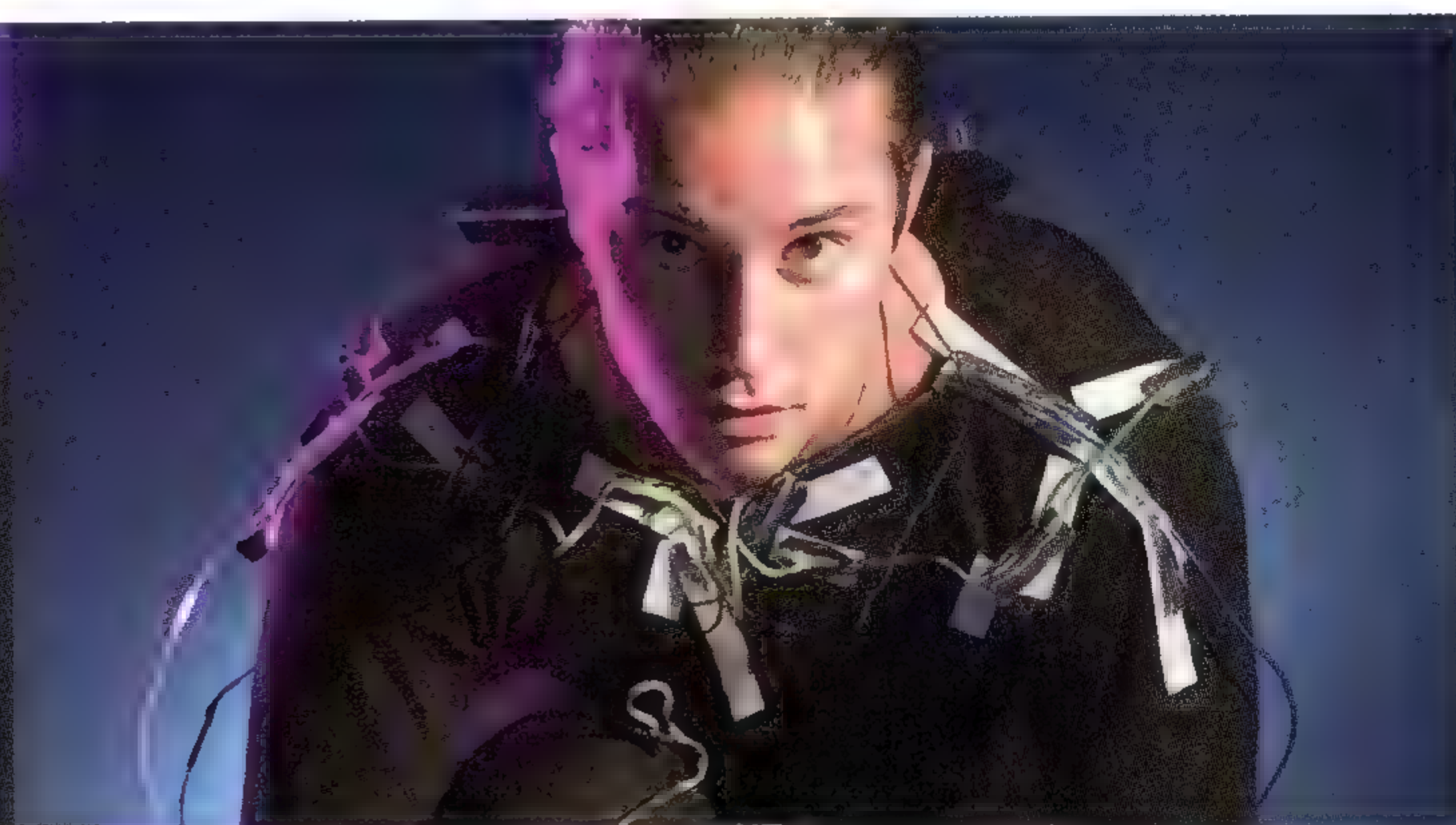
We do like the fact that Leetgion has striven to make a mouse that looks so striking, but the only thing more striking is how poorly that design delivers in the real world.

**David Hollingworth**



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# SONY VAIO TAP 20

A BATTERY-POWERED ALL-IN-ONE? SONY SCORES FOR ORIGINALITY, BUT THE BENEFITS ARE MARGINAL

**PRICE** \$1499

**SUPPLIER** [www.sony.com.au](http://www.sony.com.au)

Let nobody accuse Sony of a lack of ambition with its initial Windows 8 devices. The slide-out VAIO Duo 11 convertible was bold, if a little overtly fiddly for our liking. The VAIO Tap 20 is even more daring, adding a battery pack to a desktop all-in-one.

Now, let's be clear right from the start: the 3500mAh lithium-ion battery sitting behind a removable panel at the rear of the device doesn't make this a tablet you'd want to carry any further than the dining room table. Not only does its 5.1kg weight make it about as portable as a bag of cement, but that battery lasted a mere 2hrs 27mins in our light-use test. Although the option to shift the unit from room to room without trailing a power cable around is a bonus, this isn't an iPad rival.

It is, however, a wonderfully versatile all-in-one. That kick-stand at the back folds flush into the casing, allowing the Tap 20 to be positioned at any angle, from almost upright to flat on the desk (or even your lap). As a side effect there is no way of elevating the screen off the desk (besides commandeering a few encyclopaedias), which means you could be left hunched over the device when working.

The screen is impressive. Its 1600 x 900 resolution is a tad meagre for a 20in panel, but there's no questioning its image quality. Skin tones are perfectly accurate and bright colours pop off the screen without veering into over-saturation. Videos deliver pleasing levels of contrast, and viewing angles are exemplary from the IPS panel – although you may want to draw the blinds, since the glossy screen does nothing to minimise reflections. Our colorimeter tests backed up the experience of our eyes, with an overall contrast ratio of 1104:1 and perfectly acceptable scores for colour accuracy.

A Windows 8 all-in-one lives or dies by its touchscreen performance, and here the Tap 20 lives up to its name. It's responsive to a swish of the finger, with no evidence of the stuttering that marring some other such devices.

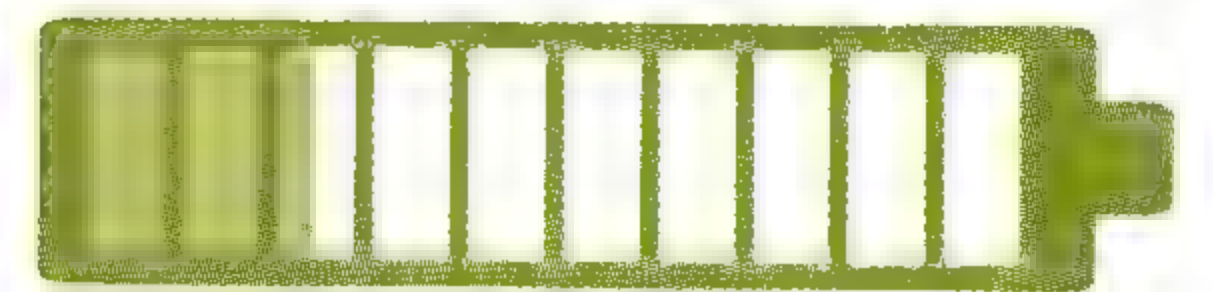
That's just as well, because the bundled peripherals make no concessions for touch gestures or Windows 8. The pebble-shaped mouse is too slender for our liking and is equipped with only standard buttons and a scroll wheel. The keys on the wireless keyboard are comfortably spaced and have a satisfying depth of travel, but it's extraordinary to include a numeric keyboard yet forego Windows 8 shortcut keys. These are clearly standard peripherals that haven't been tailored to the new OS.

The Tap 20 is too bulky to be truly portable

**BATTERY: HEAVY USE 1HR 0MINS**



**BATTERY: LIGHT USE 2HRS 27MINS**



Inside the VAIO Tap 20 lies a dual-core 1.7GHz Core i5-3317U from Intel's mobile range, allied with 4GB of RAM. That's enough to power the Tap 20 to an overall score of 0.63 in our Real World Benchmarks. A 1TB hard disk provides ample storage. Unusually for an all-in-one you can access the hard disk bay and the system's two memory slots. The battery's replaceable, too.

Although that screen is ideal for watching movies, and the integrated speakers deliver a bedroom-filling wallop of volume, there are some gaps in the multimedia section of the Tap 20's CV. There's no optical drive, no TV tuner and no remote control. It comes with only the standard version of Windows 8, so be prepared to spend more if you need those features.

All of which leaves the Tap 20 marooned in no-man's land. On the one hand it can't be called a complete Windows 8 all-in-one, since it lacks core media-centre features and software. On the other, it's far too cumbersome to be a tablet, and its one unique feature (the battery) is mostly unnecessary thanks to poor battery life.

It isn't a dreadful PC by any means: the screen is excellent, it's responsive and well designed. Once again, though, it's close but no cigar for a Sony Windows 8 device.

**Barry Collins**

## KEY SPECS

1.7GHz Intel Core i5-3317U • 4GB RAM • 500GB hard disk • Intel HD Graphics 4000 • 20in 1600 x 900 touchscreen • 2 x USB 3 • single-band 802.11bgn Wi-Fi • Gigabit Ethernet • 1.3mp webcam • 3,500mAh Li-ion battery • Windows 8 64-bit • 1yr RTB warranty • 504 x 187 (45 flat) x 312mm (WDH)

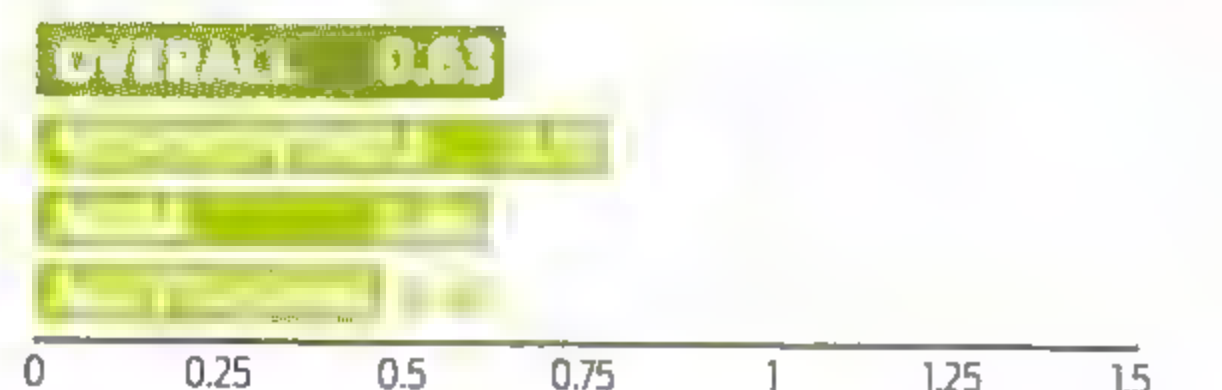
## 3D SPEED

GOOD PLAYABLE UNPLAYABLE



## BENCHMARKS

3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1



PERFORMANCE

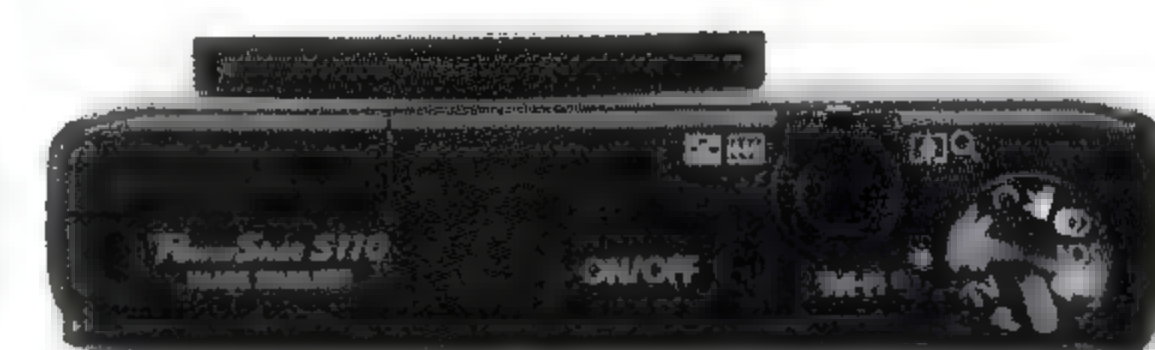
FEATURES/DESIGN

VALUE FOR MONEY

**OVERALL**







## CANON POWERSHOT S110

TOP-QUALITY STILLS AND VIDEO, PLUS A HATFUL OF FEATURES  
— OUR NEW FAVOURITE SMALL-SENSOR COMPACT CAMERA

**PRICE** \$329

**SUPPLIER** [www.canon.com.au](http://www.canon.com.au)

Compact system cameras (CSCs) such as the Sony Alpha NEX-6 may hog the limelight, but there's still life in conventional compacts. These cameras' sensors are smaller than those used in CSCs, and they don't have interchangeable lenses, but they make up for it by packing in plenty of flexibility. The lens on the S110 can focus on subjects only 3cm away, and combines a 5x zoom with a wide f/2 maximum aperture. The latter offsets the smaller sensor to give comparable image quality in low light to a CSC with a 3x zoom kit lens and an f/3.5 maximum aperture.

The S110's aperture is only this bright at the wide end of the zoom range, though. For telephoto shots it only manages f/5.9, which is slightly darker than usual. So, while this camera performs well in low light for wide-angle

photography, it isn't as competitive when you zoom in. Other compacts maintain a wide aperture throughout their zoom range, but the S110 is much slimmer and lighter than those models, at 27mm deep compared to the Panasonic Lumix DMC-LX7 (50mm), Samsung EX2F (51mm) and Canon PowerShot G15 (40mm).

Photographic control is unusually comprehensive for such a petite camera, with priority and manual exposure, HDR shooting and manual focus. The navigation pad doubles as a wheel for fast operation, and a ring encircling the lens can be assigned to various functions, from zoom to ISO speed. The 3in screen at the rear is touch-sensitive, so moving the autofocus point is a breeze. The menus aren't optimised for touch, but navigating them is simple.

The S110 isn't particularly quick at taking photos. We measured an average of 2.4 seconds between shots in normal use, while continuous mode ran at 1.9fps, or only 1fps for raw. There's a 10fps mode among the scene presets, but it only lasts for 10 frames, offers minimal control over other settings and the screen goes blank during capture. The 200-shot battery life is disappointing, too.

For features, though, the S110 is right up there. Wi-Fi is built in, giving

drag-and-drop access to SD card contents from a networked PC. You can also pair the camera with an iOS or Android device when you're out and about. We had difficulty connecting to our third-generation iPad, but our test Android handset worked flawlessly, and we could browse the card contents, either as thumbnails or full screen, and transfer images at a choice of resolutions. Leave the app running and it will also keep a GPS log, enabling it to retrospectively geotag photos. This proved a drain on our phone's battery, however.

The 1/1.7in sensor is smaller than CSC sensors, but it's 50% bigger by surface area than the 1/2.3in sensors used in cheaper compact cameras. This has a marked effect on image quality. Photos taken in bright light are crisp and detailed, with only the slightest hint of noise in shadows. Noise reduction takes its toll on subtle details in low light, but the results are much better than from cheaper compacts. As long as you keep to the wide-angle end of the zoom, night-time shots under street lighting look fine when resized for sharing online. Video quality impresses, too, with smooth autofocus and exceptional detail in 1080p clips, but the soundtrack sounds muffled.

Shot-to-shot performance is the weakest area, but while that might annoy those used to SLR speeds, it won't bother casual photographers who want high image quality in a pocket-sized camera. For those who want maximum portability, the S110 is our favourite small-sensor compact.

**Ben Pitt**



### KEY SPECS

12mp 1/1.7in sensor • optical viewfinder • 24-120mm f/2-5.9 lens • 10fps burst mode • SDXC slot • 1yr RTB warranty • 99 x 27 x 59mm (WDH) • 198g



IMAGE QUALITY ★★★★★  
FEATURES & DESIGN ★★★★★  
VALUE FOR MONEY ★★★★★

**OVERALL** ★★★★★



# SENNHEISER PC 350 SE HEADPHONES

A SIMPLE YET QUALITY SET OF GAMING-GRADE HEADPHONES, THOUGH NOT AS VERSATILE AS SOME.

**PRICE** \$US249

**SUPPLIER** [www.sennheisercommunications.com](http://www.sennheisercommunications.com)

**S**ennheiser pretty much has a lock on solid, high-end audio, and its efforts at creating dedicated gaming devices have so far been suitably impressive. The new PC 350 SE headphones, announced at CES (we got our hands on a pair late last year), are certainly impressive, measuring up to everything you could want in a gaming headset; sadly, they also cost more than a pretty penny.

Still, for a price that's likely going to be up around \$300, you do get great gear. The combination of fully enclosed, noise-blocking ear-cups, and a noise-cancelling mic, makes for hassle-free gaming in almost any environment. The added hard-shell carry-case is a great touch for LANs (where the mic really comes into its own). And the built in controls are

## KEY SPECS

50-16000Hz frequency response • 150ohm impedance • 108db sound pressure level; 2x 3.5mm jack

certainly handy – the volume dial is built into the right cup, while the mic can be easily muted by simply swinging it up and out of the way.

The sound quality, however, is the real win here, and that's what you're really paying for. The noiseblocking cans deliver great positional audio, and can pick out sound cues that even we've not heard before in a lot of our test games. Bass isn't overdone, which feels like a real luxury in these days of Dr Dre's evil influence, though explosions and other rumbling effects sound just fine. It's not a big sound,



overall, but you will find you get a greater sense of special awareness from the 350 SEs. We did, at any rate.

They're very comfortable, too, and given the slightly, well, protuberant nature of our set of testing ears, the earcups are large enough that they never feel cramped. The PC 350 SEs do tend to get a little warm, especially on hot days, so that is definitely something to take into consideration in hot summer months. The headband clamps the cups comfortably to your head, keeping them nice and secure.

The price, however, remains a sticking point. There's no doubt you're getting value, but for this money it'd be nice if the mic were detachable, so that these could take them with you.

**David Hollingworth**

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

# NETGEAR CENTRIA WNDR4700

A GREAT ALL-IN-ONE SOLUTION FOR THOSE WHO DON'T WANT TO BOTHER WITH A SEPARATE NAS

**PRICE** TBA

**SUPPLIER** [www.netgear.com.au](http://www.netgear.com.au)

## KEY SPECS

3.5in drive bay • 802.11n • 4x GbE

**T**here are different theories as to how best to set up a home network – whether or not to use as many narrow purpose components as possible, or whether it is better to adopt a single solution capable of performing as many roles as it can.

Much like Western Digital's My Net N900 router, Netgear's Centria combines router and network storage into a single unit. It is designed for those who don't want to run a separate NAS device, instead letting the router manage everything. It has a 3.5in hard drive bay, which can take a standard desktop hard drive, and this drive can then be used for both network storage and media streaming.

Apart from this, the Centria acts like a standard dual band 802.11n router, with four Gigabit Ethernet ports. It does, intriguingly, have an SD Card

reader built in, as well as two USB 3 ports that can be used to connect printers or external hard drives. It has a similar design to the R6200 802.11ac router, with a design that is balanced around staying stable despite the added weight of a hard drive within.

The Centria is a decent solution for those who don't want to worry about running a NAS. You won't gain benefits of RAID speeds or redundancy thanks to the single drive configuration, but a desktop drive will at least provide enough capacity to run regular backups, and the DLNA streaming functions work well. Just be aware that you'll be limited to 2TB drives thanks to the file system used by the device, but you can always add more storage down the track via the USB 3 ports.

Ultimately the usefulness of the Centria comes down to your particular needs. For those on ADSL, you'll need to grab a separate modem, and because you are combining router with storage you'll be locking yourself into



the technology for the near future, and will be unable to upgrade one component without upgrading the other. For those who want a fire and forget solution that combines routing with enough drive space to run regular backups, though, the Centria is well built, easy to use and offers a great degree of peace of mind without complicating your home network.

**John Gillooly**

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	N/A
<b>OVERALL</b>	★★★★★





**“With all the panels removed you end up with an excellent benching chassis, ideal for overclocking.”**

aware that the pass-throughs are not protected by rubber grommets at all.

Longer term storage is a bit more generous, and convenient, with two front-mounted, hot-swappable 3.5in drive bays, and rack inside for more, or SSD mounting. The PSU mount, which sits under the motherboard plate, is covered in soft rubber backing, too, which is a nice nod toward keeping the system a little on the quiet side – but it's hardly the HAF XB's main concern.

Despite the foreshortened height, there's no lack of room for either CPU coolers or all-important super-powerful video cards. The former can be fitted up to a height of 180mm, and the latter to a length of 334mm. To keep things tidy, there's lots of loops and mounting points for you to cable tie connections neatly out of the way, maximising the case's already impressive airflow.

It's a strikingly different case design, and while it won't appeal to everyone, if you are looking for something a bit more mobile, but still fully-featured, this is ideal. About the only thing we could find fault with was a couple of issues that suggest overall quality control might be a little lax. Firstly, many of the thumbscrew mounting points don't quite match up, making for very stiff screws and the real possibility of de-threading them over time. More worrying, though, was an alarming dent in one of the front USB3 housings. Given how inset it is in the front fascia, this could only have happened before installation, and you'd like to think a damaged part (even if it still works) wouldn't make it in. Though our case is doubtless an early sample, this is something to be aware of.

Those niggles aside, this is a case we can easily recommend.

**David Hollingworth**

## COOLER MASTER HAF XB

A VERSATILE AND UNIQUE CASE FILLS OUT CM'S HIGH AIRFLOW BRAND.

**PRICE** \$130

**SUPPLIER** [www.coolermaster.com.au](http://www.coolermaster.com.au)

**T**he HAF (or high airflow) series of cases from venerable case-maker Cooler Master have always appealed. They combine a certain rugged and aggressive charm, the kind of design that looks semi-military and often appeals to gamers and those who want fast, aggressive machines that look the part. They certainly lend themselves to high performance machines, being generally both roomy and very good on the cooling front. The new HAF XB is no diversion from the formula, but its unique form factor is truly a breath of fresh air.

The departure from the standard desktop tower design is immediately apparent; this low, squat chassis is designed with two usage patterns in mind. For gamers, the flatter case is much easier to transport, making this an ideal LAN box. To help in this regard, each side panel features sturdy and highly useful handles, for lugging about from car to LAN to wherever. The usual HAF stylings come into play here, with handsome mesh inserts, rugged support members, and a case window in the top panel, looking down

on the glory of your hard-working rig. With a well-chosen and -lit selection of parts, this top window arrangement, combined with wide-spaced cooling vents on the side panels, the XB will look fantastic.

The second way to use the HAF XB is as an open test bench, and to that end not only does the top, windowed panel detach, but so do the sides. With all the panels removed you end up with an excellent benching chassis, ideal for quickly swapping parts in and out, or fiddling around with sub-zero overclocking.

On both fronts, the XB delivers.

With all panels removed, you've also got a far more open structure for any PC installation, and with a removable mobo plate, getting a system up and running is even easier. It's a little low on drive bays compared to larger cases, but really, how many people actually need more than two optical bays? With one reserved for an actual ODD, and the other for a fan controller or even front panel for a water-cooling loop, you're fine. Speaking of water cooling, there's room in the XB for a 240mm radiator on the front panel, or a smaller 120mm model on the case's rear. If you are one of the last people around to use an external block, though, you might want to be



### KEY SPECS

442 x 330 x 423mm  
(W x H x D) • 8.2kg • 7x  
expansion slots • 2x  
5.25in drive bays, 2x  
3.5in drive bays • 4x  
2.5in drive bays • 2x  
120mm fan (front) • 2x  
USB3, audio ports • up  
to ATX size

BUILD QUALITY

FEATURES & DESIGN

VALUE FOR MONEY



**OVERALL**





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## LABS BRIEFS

### ► DENON GLOBE CRUISER

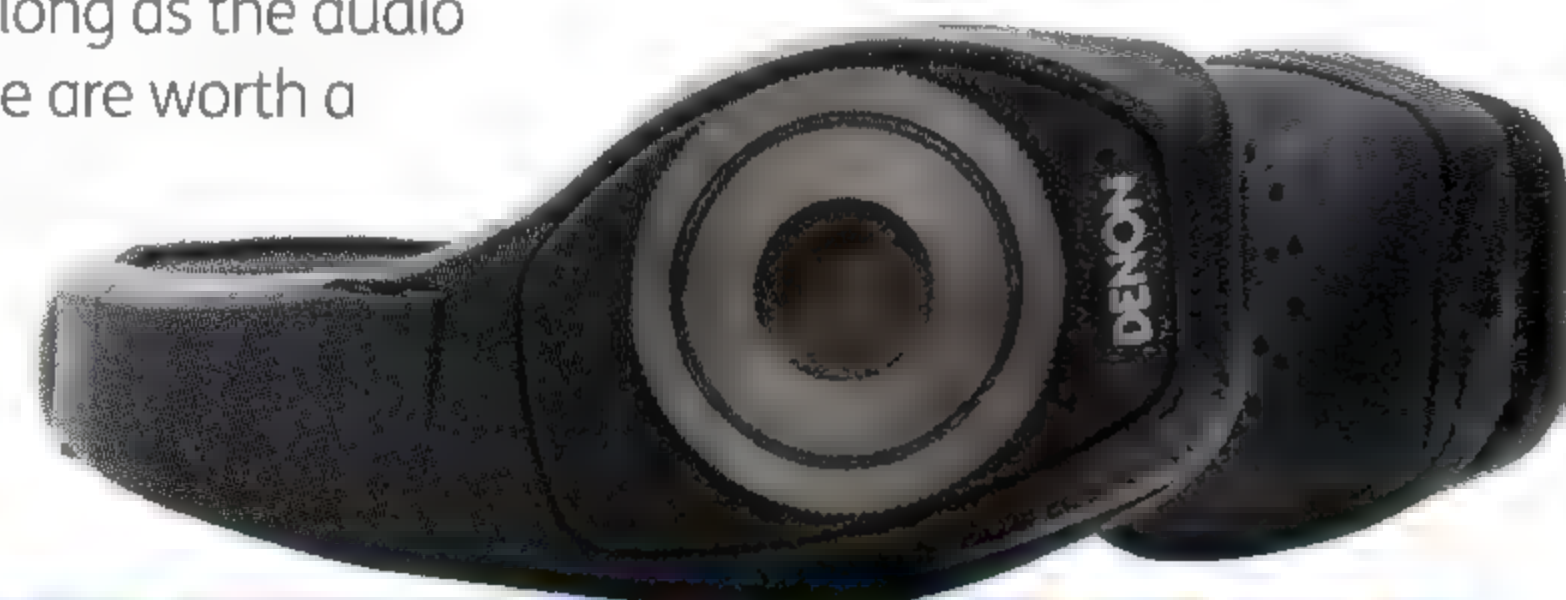
PRICE \$569

WEBSITE [www.denonasia.com](http://www.denonasia.com)

**W**e have recently seen high-end audio manufacturer Denon make a move into the headphone market, with what can only be described as a premium lineup of products.

The Globe Cruiser headphones are designed for business travellers, with bluetooth support as well as noise cancelling. The headphones themselves are made of fairly solid plastic, with memory foam earcups covered with faux leather. This makes for a fairly comfortable design, although they were a snug fit, and could have done with a bit more expandability in the band. The materials also feel a bit underdone, given the massive pricetag. Audio quality was decent, and the noise cancelling pleasant to use, lacking the 'head in a vacuum' feeling imparted by some other brands. The sound was a little odd, neither beats level bassy or as clean as a set of monitor cans. As long as the audio quality suits, these are worth a look, though the pricetag gives us pause.

John  
Gillooly



OVERALL



### ► RAPOO E9080

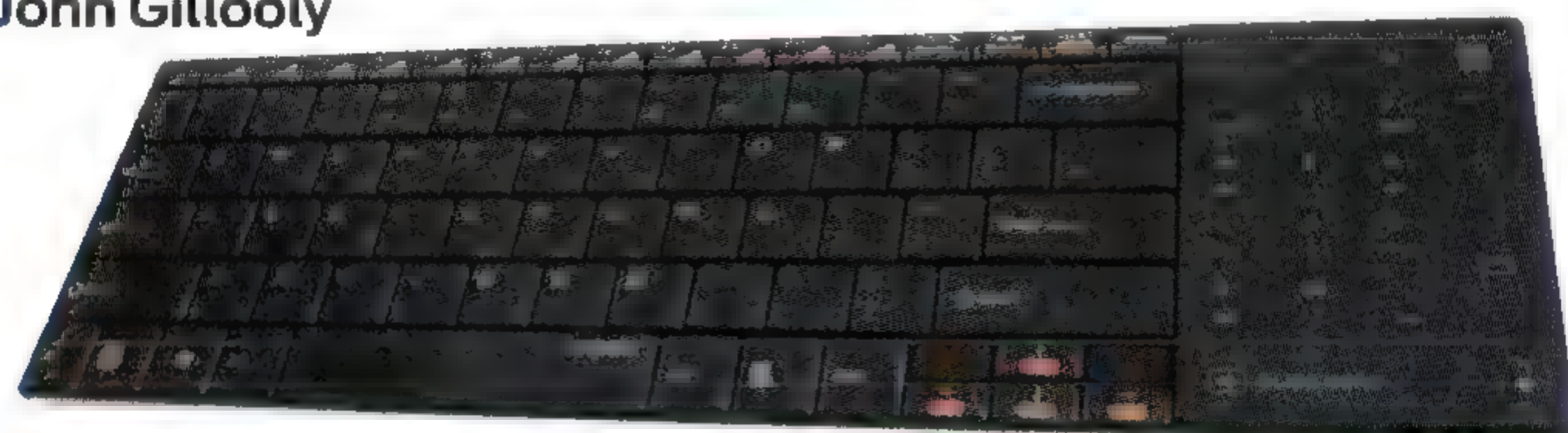
PRICE \$46

WEBSITE [www.rapoo.com](http://www.rapoo.com)

**O**ver recent months we have been quite impressed by the products coming out of Rapoo, and by and large this continues with the E9080 wireless keyboard. This is a laptop style scissor switch keyboard with a large touchpad on the right hand side, which doubles as a numpad when you need it.

While we wouldn't use it as an everyday offering, the wireless nature makes it a great solution for media PCs and the like, and the support for multitouch gestures makes it a good companion to Windows 8. We liked the fact that switching between touchpad and numpad only requires a swipe along the base, and the thin profile which incorporates a compartment for two AAA batteries that doubles as a stand to keep the keyboard at a comfortable angle. Our only major concern is that the metal lip around the edge of the unit feels a bit sharp; while we doubt it would cause injury, it does make resting hands on the keyboard an uncomfortable experience.

John Gillooly



OVERALL





# CORSAIR LINK COOLING KIT

A SOPHISTICATED, IF PRICEY, SOLUTION FOR PC FAN AND LIGHTING CONTROL.

**PRICE** \$115  
**SUPPLIER** [www.corsair.com](http://www.corsair.com)

**W**e first saw Corsair Link over a year ago, when it was first shown at Computex, and it has been a work in progress ever since. What started out as a combination software and hardware fan and lighting controller has been evolving steadily, and we are now seeing it incorporated into a wide range of Corsair products, including its Digital power supplies and latest generation of closed loop water coolers.

While the Corsair Link software package is free, and you can connect these products via USB headers on the motherboard, do so with a couple of Corsair products and you'll soon run out of USB ports. This is where the Corsair Link Commander comes in. It screws into a 3.5in hard drive bay, connects to a single USB 2 header on the motherboard and provides



**KEY SPECS**  
Supports up to 8 Corsair link devices

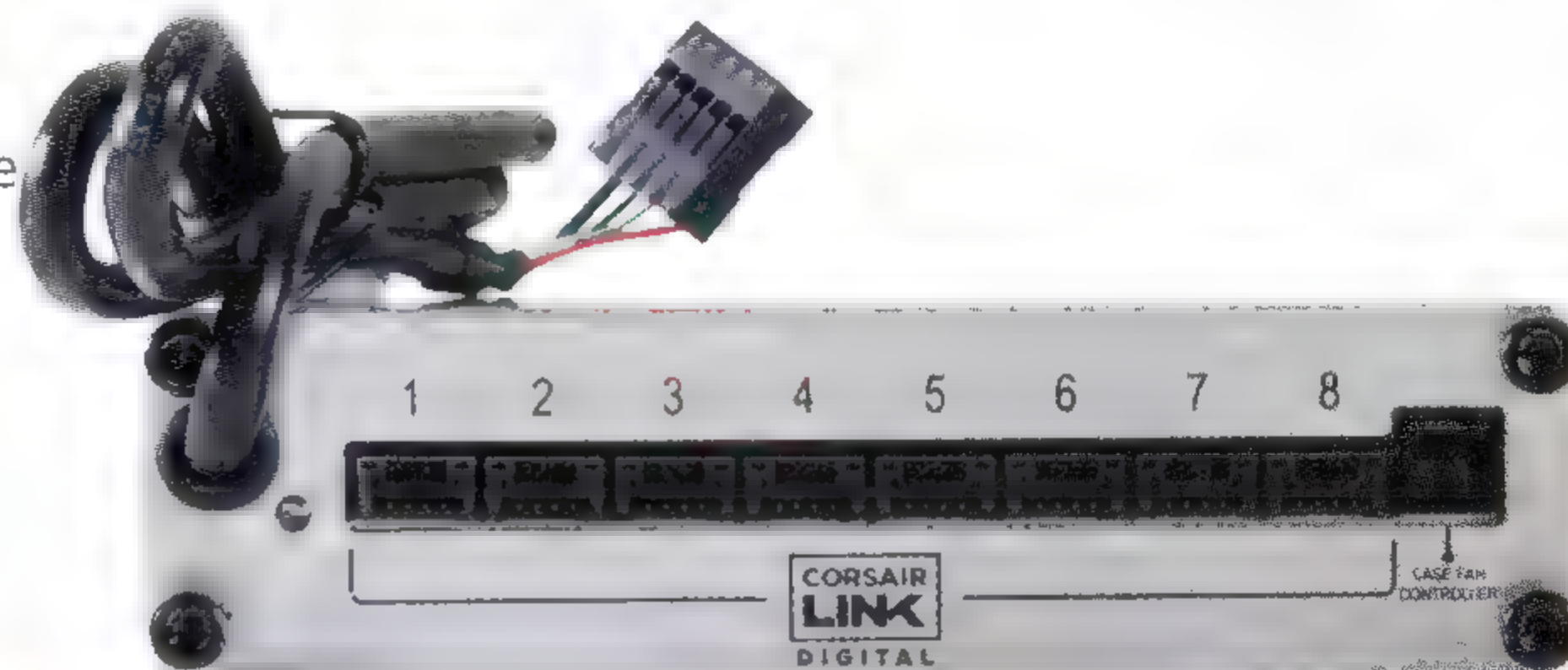
an array of the special Corsair Link connectors for you to hook your hardware into. The cooling kit also comes with a module designed to control up to five fans (with standard four-pin connectors and extension cables allowing you to use any brand of fan), and also attach four ambient air sensors.

All of this is designed to feed the Corsair Link software package with as much information as possible, and allow you to use some of the more advanced features of the software package, such as customising your system fans to respond to ambient

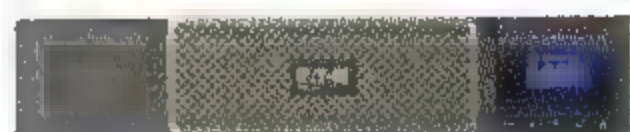
temperature. You can also get addons that will allow you to customise case lighting as well, which gives you the ability to do change lighting based on temperature or even power drain if you have the right componentry.

It definitely isn't a product for everyone, especially with a pricetag that is higher than a lot of cases, but it can be a surprisingly powerful tool if you spend much time customising your rig and cooling profiles. It also, unsurprisingly, becomes more useful when you add Corsair Link-enabled hardware, but the basic temperature monitoring and fan control aspects are manufacturer agnostic, allowing you to incorporate the hardware into your existing PC.

**John Gillooly**



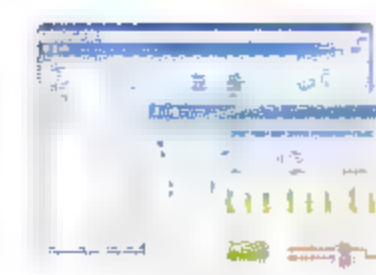
PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	<b>★★★★★</b>



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seems well designed and pretty sturdy.

Behind the door, there's more evidence of thoughtful design. A removable mesh panel over a quiet 200mm fan will keep the interior dust-free, while the panels over the drive bays are easy to clip in and out.

Above the door are the IO ports, including two welcome USB3 ports. Thankfully, too, these ports do not rely on a pass-through, and plug directly into the motherboard. The

power and reset buttons, set on the top panel, are metal, well-machined, and deliver satisfying feedback. The quality of the power button design is always a good indicator of overall build quality, and the Soprano does not disappoint on this front. A neat addition is a hot-swap drive caddy on the top of the case, fitted with a hinged door that can accommodate either SSDs or full size HDDs. This is great if you commonly swap media with friends, or need to recover data from old systems.

Slipping the side panel off reveals a pretty standard interior, though even here there are some touches. One we really love is the thumb-screws, which are secured to each panel to prevent loss. If you're frequently digging into the innards of your case, this is a God-send of a feature.

Otherwise, it's all good stuff. There's a fair amount of room behind the mobo plate for cable management, and all cable runs are rubber grommeted to protect delicate cables. The HDD cage, however, blocks video cards longer than 315mm, so be warned on that front; the caddies in the cage, though, feature more rubber, this time on the HDD mounting points, to keep noise at a minimum. It's odd, then, to discover that there's nothing cushioning the PSU mounts – that seems an oversight in a case aiming to be quiet.

The new Soprano is a bit off being perfect, but it's still a very serviceable design, and an excellent option if you're looking for something a bit quieter than usual.

**David Hollingworth**

# THERMALTAKE SOPRANO

A SOLID EFFORT ON AN OLD DESIGN, WITH SOME WELCOME NEW FEATURES FOR SYSTEM BUILDERS AND UPGRADERS.

**PRICE** \$169

**SUPPLIER** [www.dell.com.au](http://www.dell.com.au)

Only a year or two ago, the office at Haymarket Media – the makers of this fine magazine – had a whole mess of Thermaltake's last iteration of the Soprano case. In testament to their age, they were, as a rule, uniformly dust-ridden, and pretty unpopular. There was something about the double-curve design on the front fascia, and the truly tacky build quality of the front panel door, that really put users off them.

Still, there's one sitting next to me as I type, and it's at the very least stood the test of time – and multiple moves from desk to desk, and even office to office.

Thankfully, this new Soprano case

is leaps and bounds ahead of its predecessor. It's a solidly built case, with some thoughtful inclusions at just about every angle. It's not groundbreaking, but you could do far worse than build your next system into this chassis.

## Whisper quiet

One of the things that Thermaltake is aiming for with the new Soprano is quiet computing. This becomes immediately apparent when opening the door that covers the front drive bays; rather than a single layer of plastic, it's a weighty door (whose curved fascia limits it to the single orientation – no swapping the direction the door opens in), with sound-proofing material stuck between two layers of plastic. Magnets keep it tidily closed, and the entire arrangement

**BUILD**

**FEATURES & DESIGN**

**VALUE FOR MONEY**



**OVERALL**





# MIONIX NAOS 8200

SOME AMAZING FEATURES FOR THE PRICE POINT,  
BUT PERFORMANCE ULTIMATELY SUFFERS.

**PRICE** \$89.95

**SUPPLIER** <http://mionix.net>

**O**n paper, there's a lot to be impressed about with the latest gaming mouse from Mionix. Just the processing power in this mighty rodent alone is enough to amaze (and make you feel old). It features a 72MHz ARM processor – we've owned computers that had less computing grunt! With onboard memory for profiles and macros, customisable lighting, a quality cloth-wrapped cable, and a luxe rubberised grip, the Naos 8200 feels like it should be the gaming equivalent of a Ferrari, at a high-end Holden price.

Sadly, it doesn't match up in reality.

The mouse is very comfortable to use, however. The wide grip is pretty much based on a (right) hand print, and there's room and curves for all your digits to grasp the mouse. A recessed thumb grip completes the

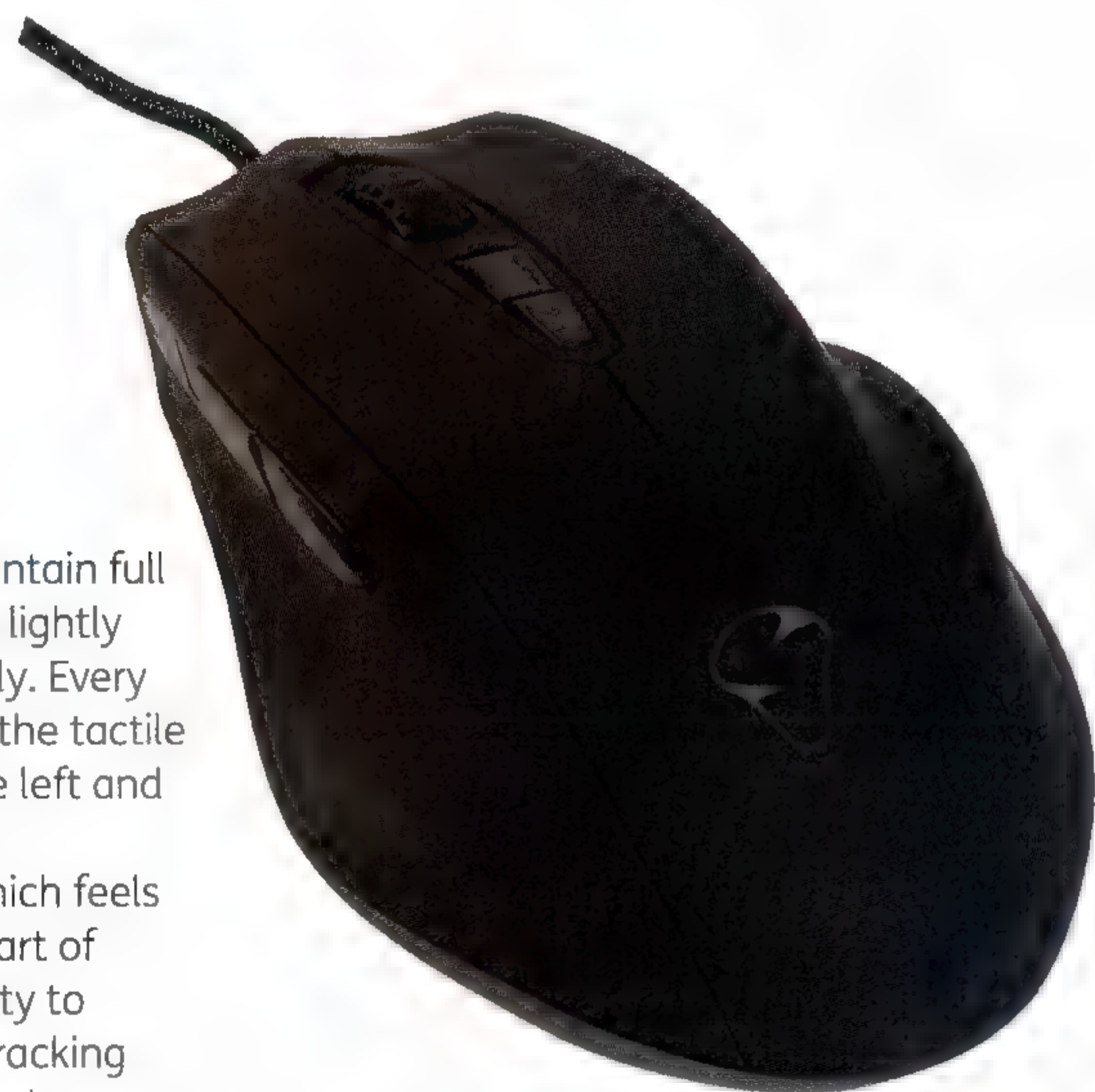
## KEY SPECS

7x programmable buttons; 128kb memory; 32-bit ARM processor, 8200 dpi sensor; 2m cable.

comfort, and it's easy to maintain full hand contact, or merely grip lightly with two fingers, just as easily. Every button is easy to reach, and the tactile and audio feedback from the left and right buttons is top notch.

It's the 8200's tracking which feels a little off, and we suspect part of the issue is the mouse's ability to scan its surface and adjust tracking appropriately. We did this, and though software did hang, it made its adjustments in the end. At which point the 8200 became fiendishly jittery and uncomfortable to use in the desktop environment. In-game, it felt precise and smooth, however, and we'd forgive the jitteriness outside of a game environment, were the 8200 not also pretty poor in terms of lift and pick-up. Even with the lift distance set as low as the Mionix tweaking software would allow, we still experienced cursor drift to a pretty high – and very distracting – degree.

And this is even with the built-to-



purpose Mionix Ensis 320 mouse pad (reviewed on p.55)!

There's no denying this is a stylish and powerful piece of kit, but for our mousing habits it's just not quite right. However, if the features are what you want, and you're a non-lifter, it may be a better choice.

**David Hollingworth**

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

# TT ESPORTS MEKA G UNIT RED SWITCH

THERMALTAKE SEES RED WITH THIS LATEST EDITION TO ITS PRO-ESPORTS GAMING RANGE.

**PRICE** \$140

**SUPPLIER** [www.ttesports.com](http://www.ttesports.com)

**I** have no doubt that there's a very sturdy keyboard inside the improbably-named Meka G-Unit – Red Switch Edition Keyboard. It's very well-built, great for carrying around in a bag (as we did while removing the keyboard to our home-based gaming PC), with a pretty good key action, not to mention a whole tonne of features.

Sadly, though, it sounds far cheaper than it really is. Encased as it is in rattly plastic, each keystroke is accompanied by a hollow rattle. If you really explore those keystrokes, you'll feel there's some sturdy internal parts, but that doesn't stop the keyboard sounding awkwardly like a cheap knock-off.

Everything else about the Meka G Unit Red Switch (ZOMG, name fatigue!) is fine, though the Cherry Red switch's linear actuation isn't our first choice for gaming. The feature set in particular is

## KEY SPECS

Cherry Red switches • 64kb memory • 1000hz polling rate • 2x USB ports • audio; 2.5kg • 1.8m cable.



great, with two USB ports, and audio jacks for headphones, as well as a detachable USB cord (for handy carting about or storage). The detachable wrist-rest is well made, and for a change more than just a one-piece mould. Both it and the main board feature solid rubber-footed supports, which keep the G Unit firmly in place on your desktop.

We had no trouble with ghosting during our testing, and the macro recording functions are powerful and simple to use, and the macro keys themselves well-placed to the left-hand side of the board. There's no on-the-fly recording, sadly. There's minimal lighting, but it highlights those most important of gaming keys, WASD, and the level of lighting can be easily

toned down or switched off.

The G Unit works well, and if you want to avoid loud mechanical switches, or switches with a heavier actuation point, it's a good option, with great features. It doesn't quite beat our current favourite macro keyboard (Corsair's K90), but it is very competitive if you're looking for something with a different style, and a slightly wider feature-set.

**David Hollingworth**

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



## ▶ NETGEAR A6200 WIFI USB ADAPTER

**PRICE** \$85

**WEBSITE** [www.netgear.com.au](http://www.netgear.com.au)

**T**his year is set to see the widespread rollout of the new 802.11ac wireless standard, which has been appearing in routers for some time now, but has suffered from a lack of client solutions. We are finally starting to see USB adapters hit the market, even though devices with inbuilt 802.11ac are yet to launch.

Netgear's A6200 adapter comes with full support for the new standard, and while bulky, proves a great solution if you want to leverage the faster wireless speeds that the spec offers. It isn't for everyone, though: while it is backwards compatible with 802.11 a/b/g/n routers, you'll need an 802.11ac router for it to shine.

Consider the A6200 to be a situational device, though, and it is well worth a look. For us the most obvious use would be to wirelessly attach high-bandwidth devices like our NAS or Media PC to our home network, thus getting rid of the wires. Not only is it the only way to make the most of an 802.11ac router, it is a viable alternative to powerline adapters as well, which makes the relatively high pricetag a little easier to swallow.

**John Gillooly**



**OVERALL**



## ▶ INTEL SSD 335 240GB

**PRICE** \$220

**WEBSITE** [www.intel.com](http://www.intel.com)

**I**ntel made a real comeback last year in the SSD space after being quiet for a few years, with several new models hitting the market. The SSD 335 is the most recent of these, and combines the Sandforce S2281 controller seen on the SSD 330 series with the company's newest 20nm MLC flash memory.

Think of it as the replacement for the SSD 330 lineup – it isn't going to offer much in the way of a performance boost, thanks to the use of the same Sandforce controller and SATA 6Gbps connection, but it brings with it the kind of reliability and validation that has made Intel a much respected player in the SSD market. With AS SSD measuring reads of 488MB/s and writes of 329MB/s it isn't the fastest out there. But for

those making the switch from HDD to SSD, performance

nowadays isn't as much of a concern as pricing is anyway – the boost going from mechanical to solid state storage is huge enough that price and reliability is becoming a much bigger issue than the minutiae of performance details.

**John Gillooly**



**OVERALL**



## ▶ TT ESPORTS HYPERION

**PRICE** \$25

**WEBSITE** [www.ttesports.com](http://www.ttesports.com)

**W**ell, how do you review something that, at it's simplest, is just a rack? Just a rack or not, it's certainly a very useful one – the Hyperion is a simple mount for you to place on your computing desk (or gaming den, man-cave, grrl-lounge, or whatever), which keeps your headphones out of the way, but dangling handily in reach. It's made of plastic, and you've got to put it together yourself, but it's very sturdy – not to mention handy. It may seem excessive, but given how often we've dropped, mangled, or similarly abused our headphones, the Hyperion's utility became apparent immediately, especially if you're getting up and down from your computer often. The desing is a bit garish, but if you're a fan of Tt eSports' gear, and want a unified desktop space, it really looks the part.

(And yes, we are aware that this is exactly the kind of thing you could probably build yourself out of spare cans of drink and a coat-hanger, but we promise you this one looks better, and won't smell odd in summer.

**David Hollingworth**



**OVERALL**



## ▶ MIONIX ENSIS 320

**PRICE** \$29

**WEBSITE** <http://mionix.net>

**F**inding the right gaming surface can make all the difference. There are those who swear by expensive, custom-made models, those who are happy with whatever their desk is made of, even those content to use any old magazine lying around. But any gamer worth their salt will have a solution they swear by.

Our current mousing surface is a well-worn but very servicable Cooler Master mat, with a gritty, solid surface. At first glance, this ultra-smooth, rubber-backed metal pad from Mionix seems light years ahead, and matched with the Naos 8200, reviewed on p. 51, it should – on paper – be even better. Sadly, it's rather disappointing. The surface is in fact, for our tastes at least, too smooth, creating a fuller contact between mouse and desk, and creating a lot of uncomfortable drag while in game. This is was apparent in the high amount of wear it produced

on our test mouse's plastic feet. Build quality is also a bit of an issue, with the edges feeling quite rough and unmachined. Not ideal.

**David Hollingworth**



**OVERALL**





# SECURITY APPS ROUND-UP

JENNETH ORANTIA REVIEWS THE LATEST AND OCCASIONALLY GREATEST APPS ACROSS ALL THE AVAILABLE MOBILE PLATFORMS

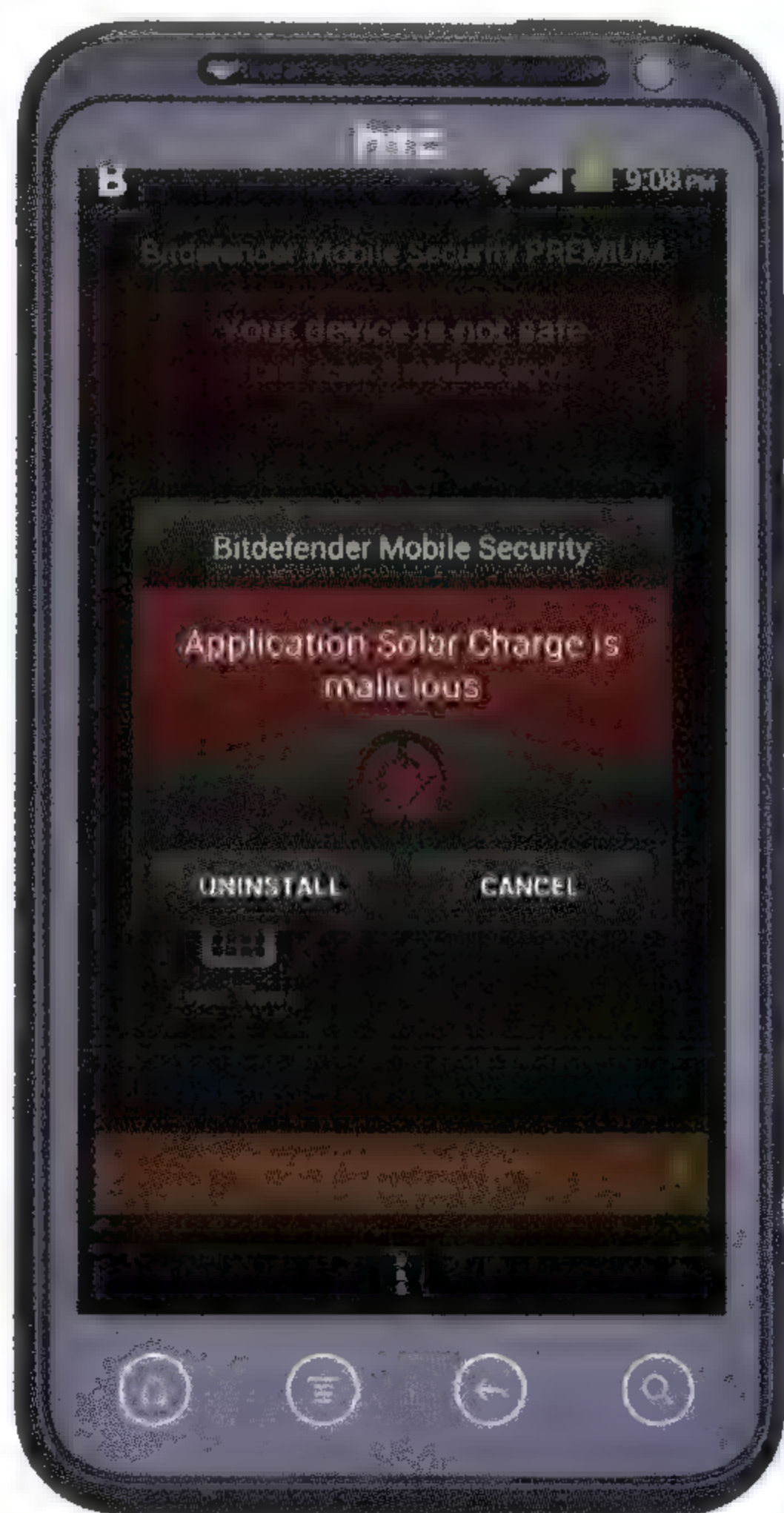
**H**ow much do you really know about the apps and games on your Android smartphone? If you downloaded them from unofficial sources (that is, outside of the Google Play Store), there's a possibility that your personal information, passwords, and even your phone bill may have been compromised.

The latest figures from the top security vendors don't paint a pretty picture of the Android app ecosystem. Last year, the incidence of Android malware spiked significantly, with Kaspersky Lab identifying an average of 6300 new samples every month (up from only eight in 2011). Trend Micro predicts the most serious online security threat affecting Australians this year will be malicious and high-risk Android apps, reaching a staggering 1 million threats (up from 350,000 at the end of 2012).

Malicious apps can wreak all sorts of havoc on an Android smartphone. In its most benign forms, it's capable of displaying pop-up ads in annoying places, hijacking your web browser and sending your device information to a hacker-controlled server. But it can do a lot worse. Other, more insidious forms can send premium-rate messages in the background (thereby running up your phone bill), connect to command-and-control centres for further commands, and forward your text messages and email.

Most of the risk can be eliminated by sticking to apps from the Google Play Store only, but this method isn't completely foolproof. Dozens of malicious titles were detected in the official app store last year, many of which were masquerading as popular apps like Temple Run, GTA 3 and Super Mario Bros. However a combination of tactics will keep you in the clear. A good anti-malware security app will eliminate most of the danger, and the rest is down to common sense.

As well as sticking to the Google Play Store for all of your downloads, it's a good idea to check each app listing's reviews and number of downloads before you download it, and check the permissions that it's asking for before you install it. You should also disable the ability to install apps from unknown sources to prevent 'drive by downloads' (found in Settings > Security > Unknown sources).



## ▶ BITDEFENDER MOBILE SECURITY

PRICE FREE DEVELOPER BITDEFENDER PLATFORM ANDROID

**T**he free version of Bitdefender Mobile Security works well enough, with a malware scanner and an application audit feature, along with a remote locate option from the web-based interface. However, it fails to stand out from the other apps we tested. The scanner is hardly real-time – it only fires up after you install an app, and there's a small delay before it kicks in.

Once you go for the premium yearly subscription, which is a third of the price of the others, at \$9.95, Bitdefender Mobile Security gets interesting. This enables anti-theft protection you can access through the web-based interface or via SMS commands, and a couple of unique features. You can get your lost phone to answer a phone call (it doesn't work on phones running Android 4.1 or higher), or even make it call you with the speaker turned on.

EASE OF USE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

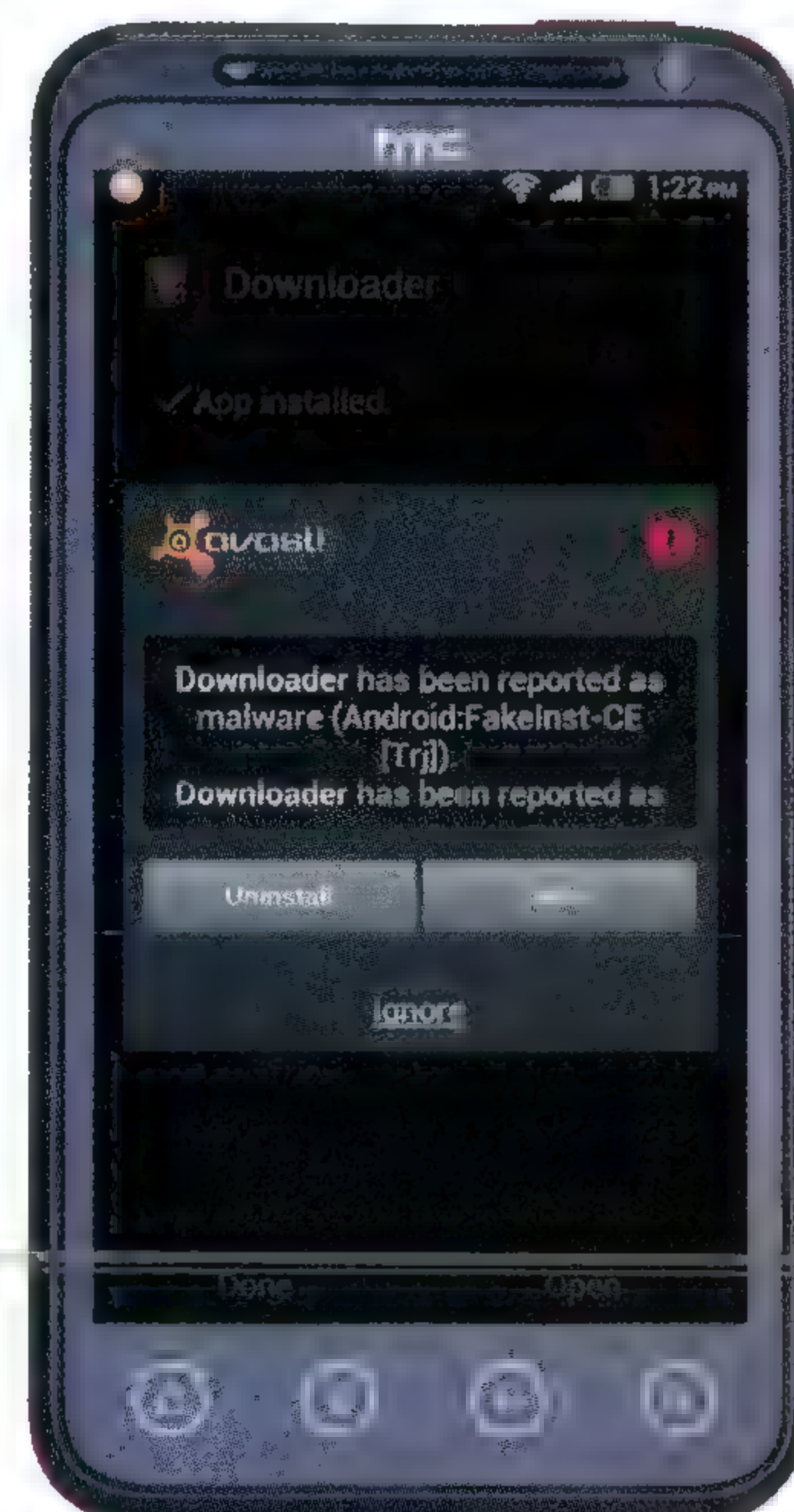
## ▶ AVAST! MOBILE SECURITY

PRICE FREE DEVELOPER AVAST SOFTWARE PLATFORM ANDROID

**A**vast! is easily the most powerful security app of the bunch – a fact that's made no less impressive by its zero-dollar pricetag. While its user interface is a little bland compared to its competitors, it more than makes up for it by the sheer volume of features on offer. Power users in particular will appreciate that it caters to "rooted" smartphones as well, with exclusive features like a PC-like system firewall and the ability to survive a factory reset with all of the anti-theft protections intact.

Avast! Mobile Security is the only app we reviewed that supports all of the anti-theft commands from both a web-based interface and via SMS for free. It also features a built-in network meter so you can check how much data each of your apps is using. The only trick Avast! misses is failing to scan apps for malware before they're installed – like Norton, it only does this after the app is installed on your smartphone.

EASE OF USE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★





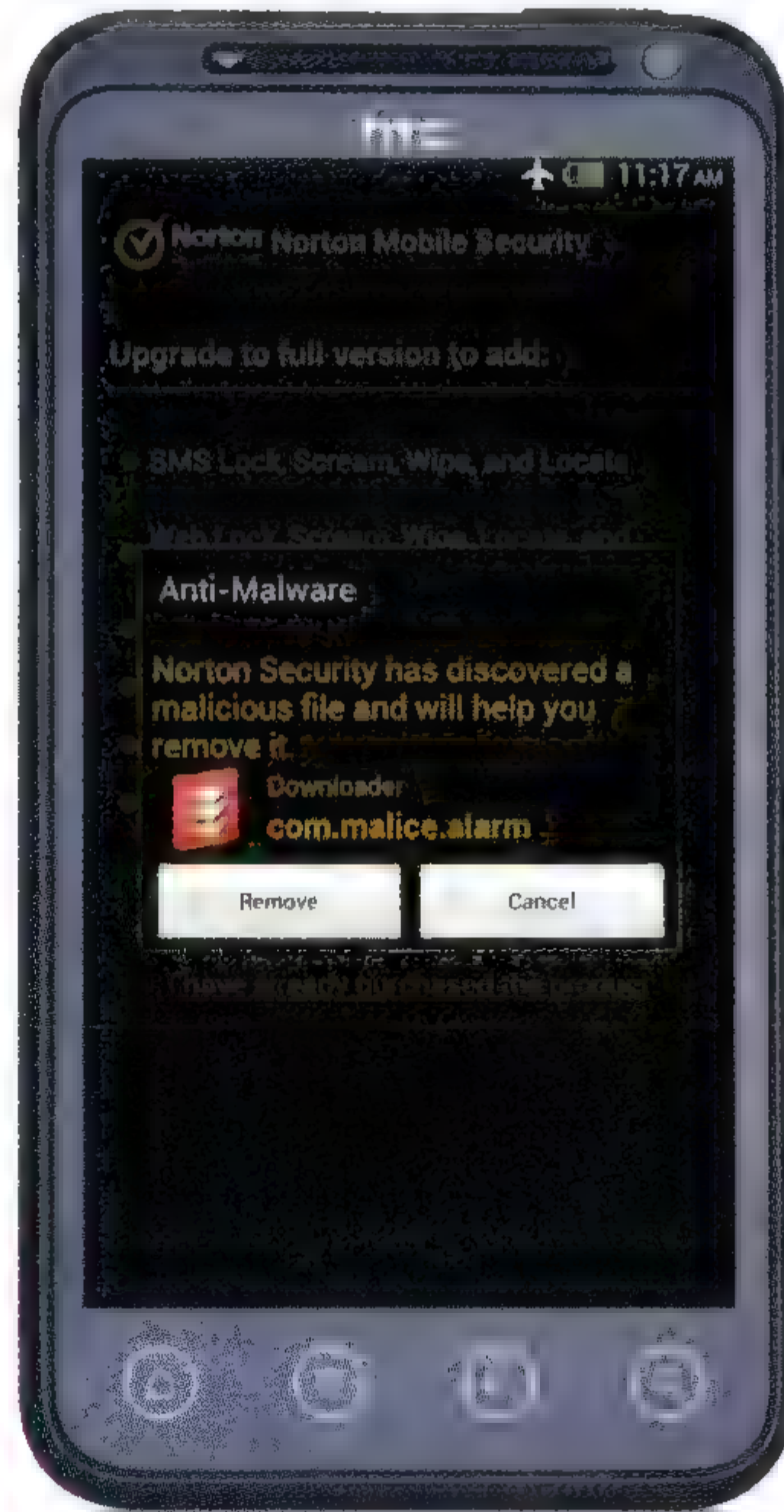
## ► NORTON MOBILE SECURITY LITE

**PRICE** FREE **DEVELOPER** SYMANTEC  
**PLATFORM** ANDROID

**A**lthough it's the Lite version, the malware scanner in this app is identical to the one that you have to pay for. Apps are swiftly scanned for malicious code as soon as they're installed, and if you're really paranoid, you can schedule scans to run automatically on a daily, weekly or monthly basis.

If it's just malware protection you're after, Norton Mobile Security Lite offers a good base-line level of protection, even if it isn't as pro-active as the other apps. It's also fairly limited in functionality. If you sign up for a free account, you can locate your phone on a map using the web-based interface and remotely lock it by sending a special SMS. All of the other features, such as call blocking, web protection and the full set of anti-theft protections, is only available if you upgrade to the paid service for \$29.99 a year.

BASED ON USE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



**“The latest figures from the top security vendors don't paint a pretty picture of the Android app ecosystem.”**

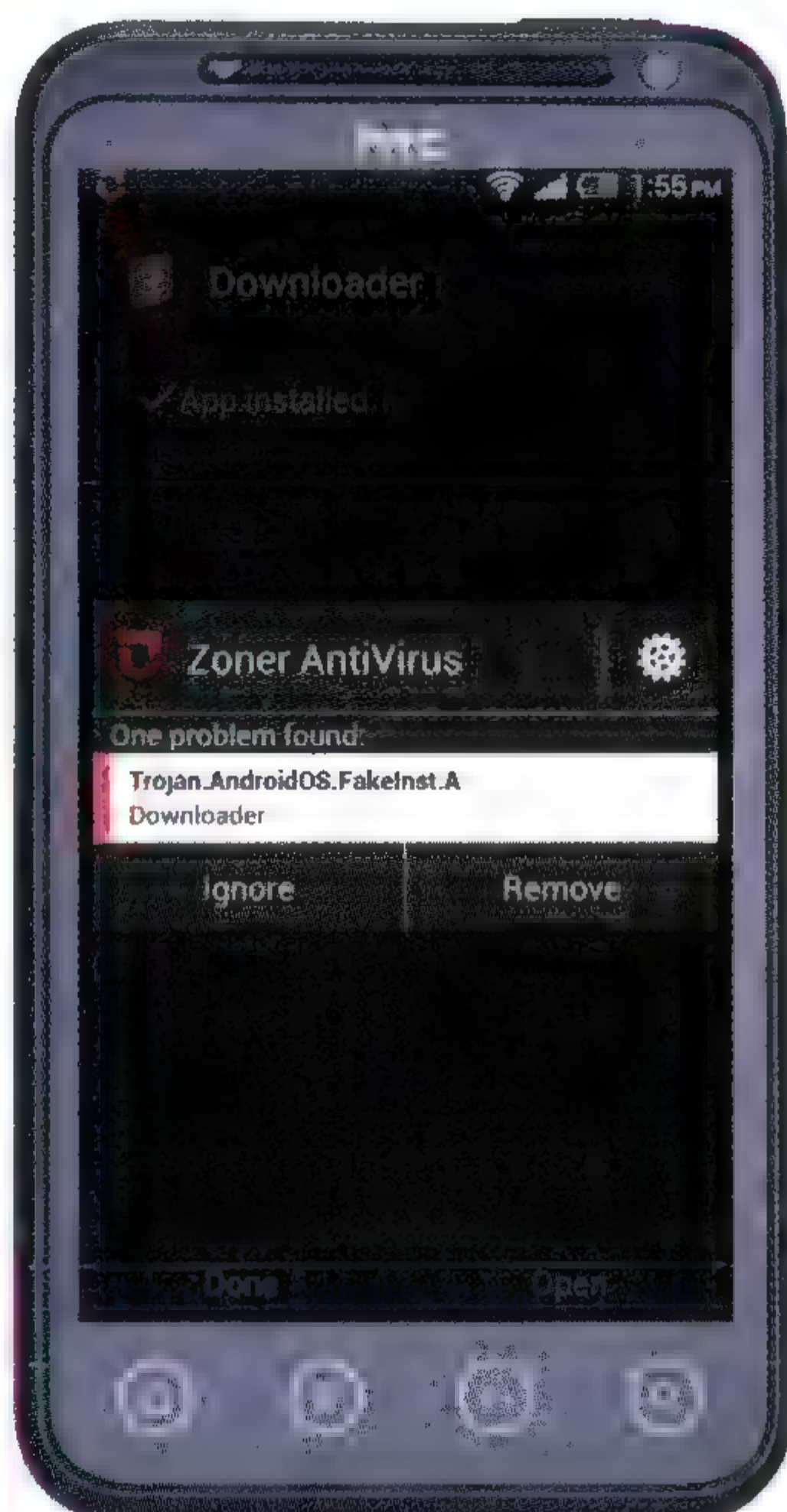
## ► ZONER ANTIVIRUS FREE

**PRICE** FREE **DEVELOPER** ZONER  
**PLATFORM** ANDROID

**Z**oner offers an impressive selection of features in its free AntiVirus app. As well as the expected malware scanner, it includes a phone filtering feature to block calls and SMS from certain numbers, the full complement of anti-theft functionality (although the commands are initiated via SMS only, as there's no web-based interface), and a “secure message” feature for sending encrypted messages (the other person needs to have Zoner AntiVirus installed too).

You can upgrade to the full version for a paltry \$4.79 one-time fee, but it hardly seems worth it, given everything that's already included in the free app – the only extras you get are ad detection and the ability to backup and restore your SMS and call logs. Zoner favours the pro-active approach, and scans your smartphone for existing malware as soon as you install it, as well as any apps before you install them.

BASED ON USE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



## ► LOOKOUT SECURITY & ANTIVIRUS

**PRICE** FREE **DEVELOPER** LOOKOUT LABS  
**PLATFORM** ANDROID

**L**ike Norton, Lookout offers free and paid versions of its Security & Antivirus app. The difference is that you get a lot more for nothing with Lookout. As well as the excellent malware scanner, there's a ‘signal flare’ feature that automatically saves your phone's last known location before the battery dies, and a ‘lock cam’ feature that takes a photo of anyone that enters your password incorrectly three times. However, neither the free nor paid version supports SMS commands for anti-theft protection.

Lookout is proactive when it comes to security. It initiates a malware scan as soon as you install it to check the apps that are already installed, and rather than scanning apps for malware after they're installed, Lookout does it beforehand, before it can do any damage on your phone. Lookout also tells you what type of malware it is (such as a Trojan or adware) and exactly what it will do on your phone if you install it.

BASED ON USE	★★★★★
FEATURES	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★







# Internet security suites

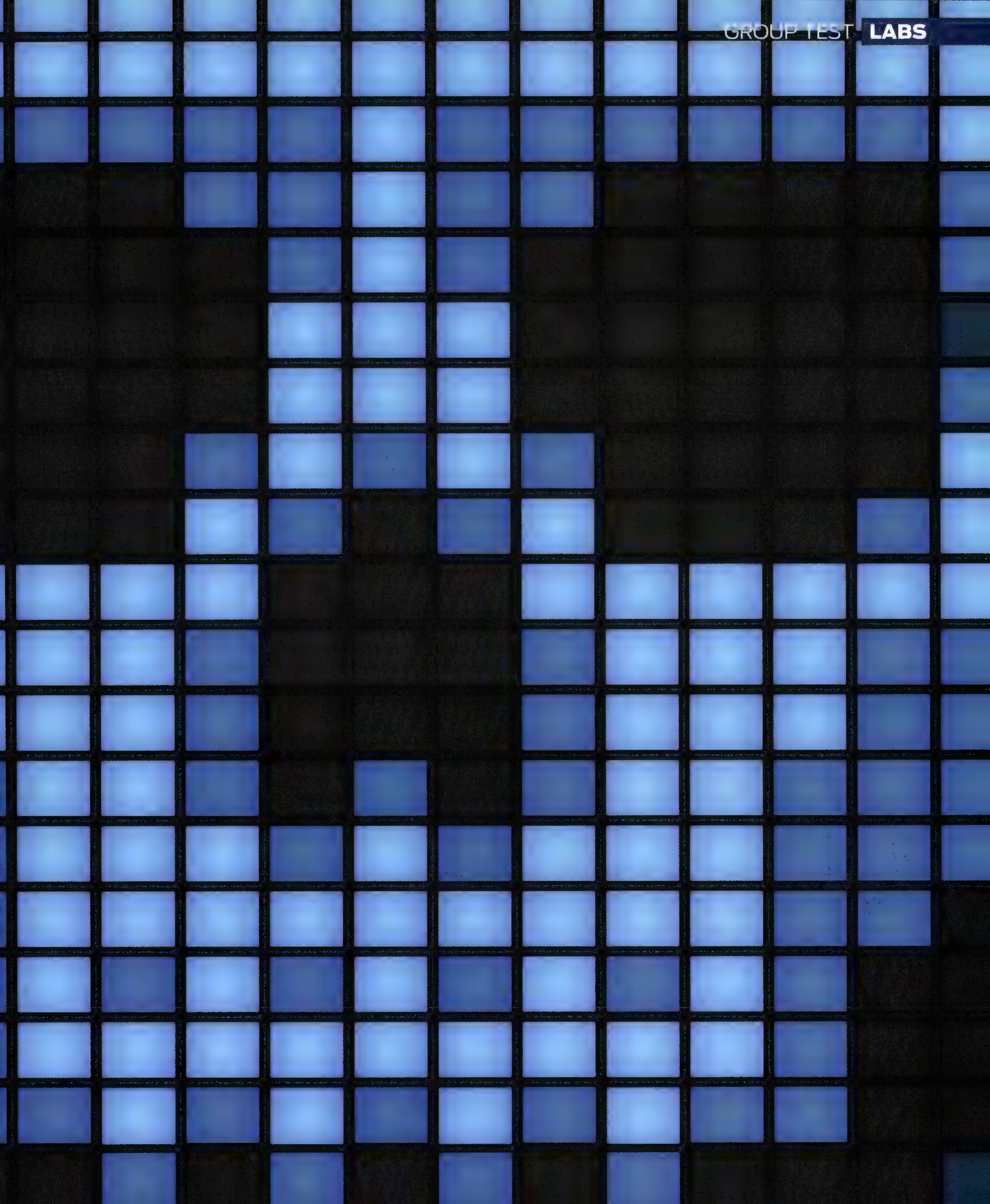
ARE YOU RELYING ON WINDOWS' FREE ANTIVIRUS SUITE TO PROTECT YOUR PC? IF SO, THE RESULTS OF OUR LATEST TEST OF SECURITY SUITES MAY SHOCK YOU. FIND OUT WHY MICROSOFT SECURITY ESSENTIALS IS FAILING TO PROTECT FROM THREATS, AND WHICH OF ITS FREE AND PAID-FOR RIVALS YOU SHOULD INSTALL INSTEAD. WE HAVE 16 OF THE BIGGEST NAMES ON TEST.



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# Buyer's guide

**C**hoosing a security suite has never been easy: there are many options, and a bamboozling array of features to compare. The first question, though, has to be how effective each package is at the basic job of detecting malware. Our results graphs on p70 and the performance scores on each review offer guidance. Opposite, we explain how these are reached.

There are secondary features to consider, too. Commercial security suites often include their own firewall, to protect you from external intrusions. We haven't seen any evidence that these give significantly better protection than the built-in Windows Firewall, but some offer a more configurable interface - appealing to advanced users - while others may be friendlier for novices.

Another feature you may want is web protection, where a security package integrates with your browser to block sites known to distribute malware, or to flag them

in search results to warn you not to click on them in the first place.

Some features won't be useful to everybody. Email scanning can protect you from phishing attempts, email-borne malware and spam; if you use a webmail service for your personal email this won't help, however, since your messages are stored on a remote server that's beyond the reach of your security software.

Many suites include parental controls, which can be used to keep children away from unsavoury websites, or to restrict and monitor their online activity. It's worth having a look at Microsoft's free Family Safety service first, though, to see if it covers your needs.

Other niceties include personal data protection, which warns you whenever sensitive information such as credit card details are transmitted from your computer, and a "game mode" that suppresses alerts and interruptions while you're running a

full-screen application such as a game or video player. In a few cases you'll get an integrated backup client, with a small amount of online storage for personal use.

If you don't need all of these features then a free package may seem your best bet, but most commercial security suites are also offered in cheaper antivirus-only versions (as well as premium editions with additional system tools and backup capabilities), so to an extent you can pick and choose the features you want within your preferred package.

One possible downside to a feature-packed suite is its impact on your system's startup time, memory usage and general responsiveness. In practice, however, it doesn't always go as you might expect: some of the most comprehensive suites are among the most nimble, while seemingly simple software can place a major burden on your system resources. Again, see our graphs and How We Test, opposite, for details.



	RECOMMENDED			LABS WINNER				
	Avast Free Antivirus	AVG AntiVirus Free 2013	Avira Free Antivirus 13	Bitdefender Internet Security 2013	BullGuard Internet Security 2013	Eset Smart Security 5	F-Secure Internet Security 2013	G Data Internet Security 2013
<b>OVERALL</b>	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Performance	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Features	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Ease of Use	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Value for Money	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
<b>PRICING</b>								
Price	Free	Free	Free	\$104.95	\$89.95	\$89.95	€59.99	\$63.25
Supplier	www.avast.com	www.avgfree.com.au	www.avira.com	bitdefender.com.au	www.bullguard.com	www.eset.com.au	www.f-secure.com	gdatasoftware.com
Free trial period	N/A	N/A	N/A	30 days	60 days	30 days	30 days	30 days
OS support	Windows 8/7/Vista/XP/2000	Windows 8/7/Vista/XP	Windows 7/Vista/XP	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP/2000	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP
<b>FEATURES</b>								
Firewall	✗	✗	✗	✓	✓	✓	✗	✓
Email scanning	✓	✗	✗	✓	✓	✓	✓	✓
Web protection	✓	✗	Via optional toolbar	✓	✓	✓	✓	✓
Anti-spam	✗	✗	✗	✓	✓	✓	✓	✓
Online backup (standard)	✗	✗	✗	2GB via separate free app	5GB	✗	✗	✗
Parental controls	✗	✗	Limited	✓	✓	✓	✓	Optional module
Game mode	✓	✗	✗	✓	✓	✓	✓	✗
Personal data protection	✗	✗	✗	✓	✓	✗	✗	✗



## HOW WE TEST

We award each package a score out of six stars across four categories – Performance, Features, Ease of Use and Value for Money. Our Performance score reflects the ability of each suite to detect real-world malware under real-world conditions. In this Labs, we've based this score on the combined results of the latest malware detection and repair tests carried out by AV-Test, an independent consultancy.

The Features score reflects the range of features offered by each package, taking into account how useful and relevant they are: tune-up utilities that duplicate native Windows functions will score less than practical anti-malware features such as sandboxes and vulnerability scanners.

Our Ease of Use score represents, in part, each package's impact on your system's responsiveness and resources. To quantify this, we time how many seconds installing each package adds to the startup time of a typical mainstream



laptop (specifically, an Acer Aspire 5750G) running Windows 7.

We also measure the system's overall memory footprint two minutes after the desktop appears. Both measurements are taken after four reboots to ensure installation and optimisation is complete.

Finally, we measure how long it takes to complete a "quick" scan of a clean PC. We also consider the accessibility of each package's user interface, and how clear its alerts and responses are when a security issue is detected, to arrive at an overall score for Ease of Use.

Finally, our Value for Money score indicates whether the price you'll pay for each package represents good value for the features and performance on offer. AV vendors tend to quote one price on their sites then offer a discounted price as a sales tactic. In the interest of uniformity we have used the initial price to calculate Value for Money. From these scores we derive the Overall score.



KASPERSKY

McAfee



Norton

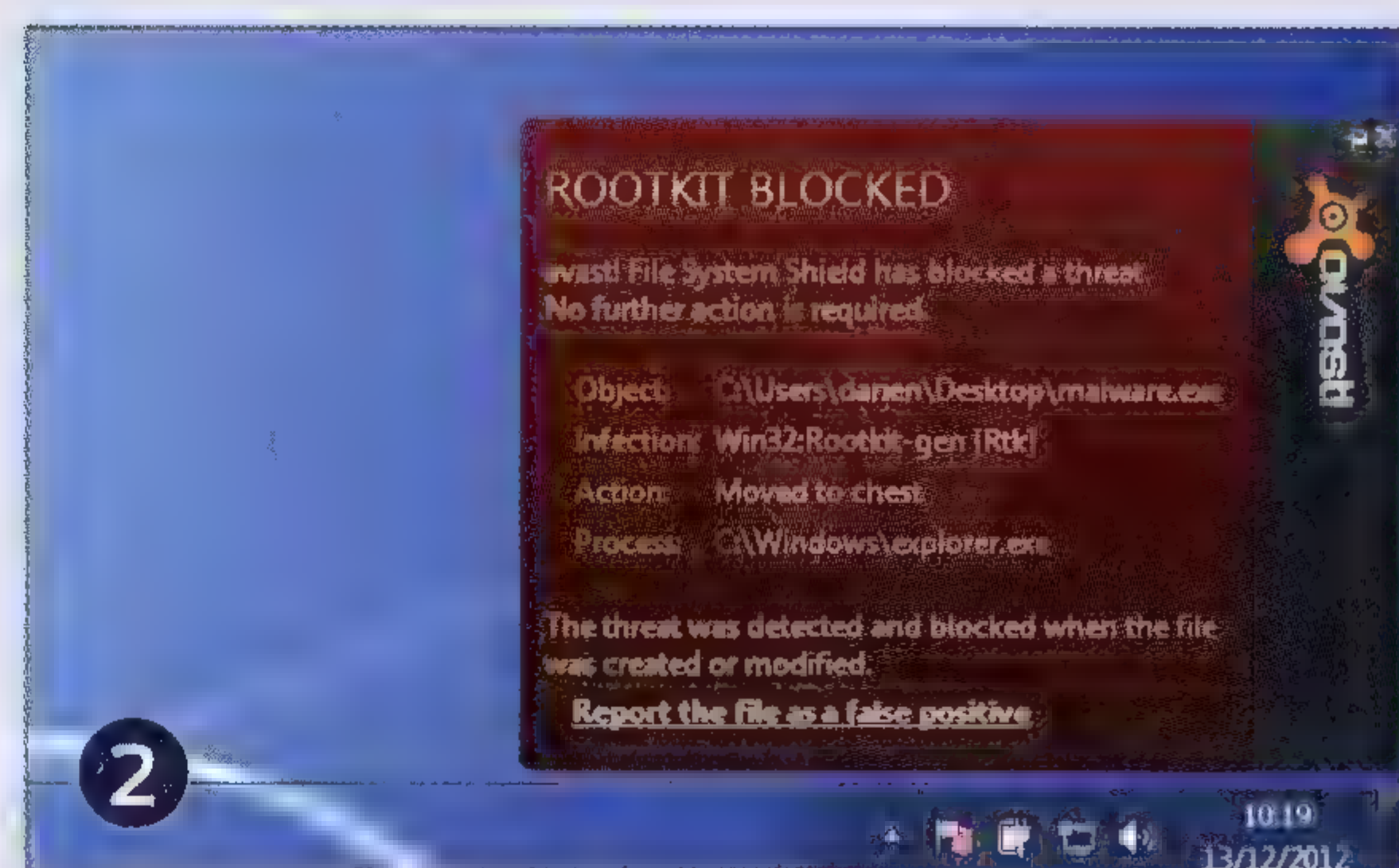
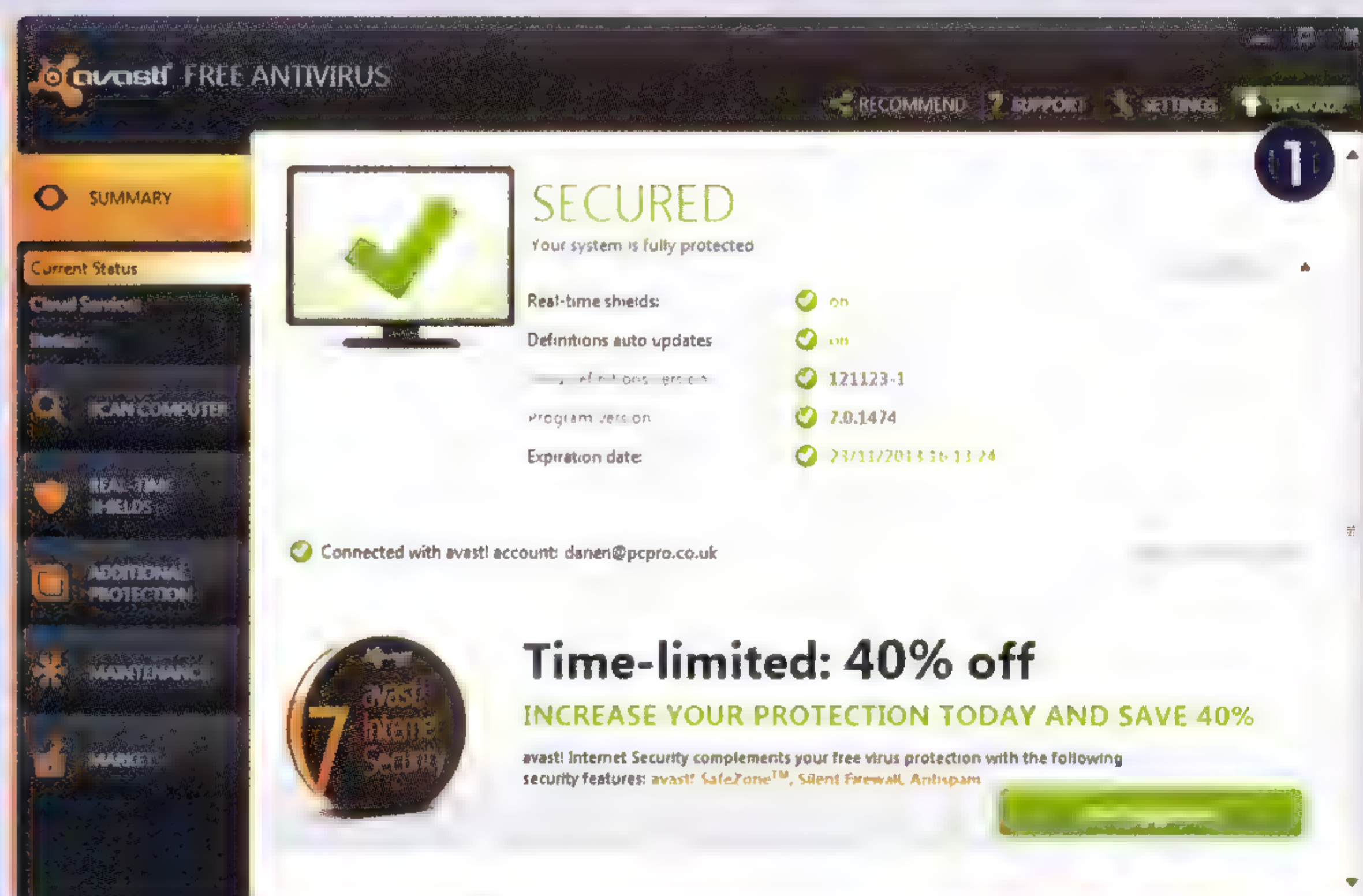
PANDA

PC TOOLS

TREND MICRO

GFI Vipre Internet Security 2013	Kaspersky Internet Security 2013	McAfee Internet Security 2013	Microsoft Security Essentials	Norton Internet Security 2013	Panda Internet Security 2013	PC Tools Internet Security	RECOMMENDED Trend Micro Titanium Internet Security 2013
★★★★★☆☆	★★★★★☆☆	★★★★☆☆☆	★★★★☆☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
★★★★★☆☆	★★★★★☆☆	★★★★☆☆☆	★★★★☆☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★☆☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
★★★★★☆☆	★★★★★☆☆	★★★★☆☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Up to ten PCs, \$69	\$99.95	\$99.95	Free	\$99.99	\$81.99	\$79.99	\$99.95
www.vipre.com.au	kaspersky.com/au	www.mcafee.com.au	www.microsoft.com.au	au.norton.com	pandasecurity.com.au	www.pctools.com	trendmicro.com.au
30 days	30 days	30 days	N/A	30 days	30 days	×	30 days
Windows 7/Vista/XP	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP	Windows 7/Vista	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP	Windows 8/7/Vista/XP
✓	✓	✓	×	✓	✓	✓	×
✓	✓	✓	×	✓	✓	✓	✓
✓	✓	✓	×	✓	✓	✓	✓
✓	✓	✓	×	✓	✓	✓	✓
×	×	1GB	×	×	2GB (via Mozy)	×	×
×	✓	✓	×	Via Online Family service	✓	✓	✓
×	✓	✓	×	✓	✓	✓	×
×	✓	×	×	×	×	×	✓
Shredder, update checker	Safe Money, virtual Keyboard	Shredder, QuickClean, vulnerability scanner	×	Facebook wall scanner, Identity Safe, network management	Network management, safe browser	Scam alerts	Facebook privacy scanner, shredder, system tuner





## PERFORMANCE AT A GLANCE



Zero-day malware protection



Older malware protection



Infected system repair

# AVAST FREE ANTIVIRUS

THE CREAM OF THE CROP OF FREE AV TOOLS, WITH PLENTY OF FEATURES, GREAT PROTECTION AND AN EXCEEDINGLY LIGHT TOUCH

**PRICE** Free  
**SUPPLIER** [www.avast.com](http://www.avast.com)

In our view, the Avast Free Antivirus front end is one of the most attractive around. It's easy to navigate, too, with a tabbed interface offering direct access to primary settings and information panes, and illustrated with surprisingly tasteful graphics.

Since it's free, some advertising is inevitable. The front page of the interface displays a big advert for Avast's paid-for Internet Security suite, and an ever-present "upgrade" button sits in the top-right corner of the window. A section of the interface is dedicated to promoting other Avast products and services, both paid-for and free, including protection for Android devices.

In everyday use this isn't too intrusive. Turn off the grating voice notifications and Avast is inconspicuous. You'll mostly only notice it via the WebRep browser extension, which adds safety ratings to search results and shows trustworthiness ratings for sites. It installs by default in common browsers – but it doesn't meddle with home page or search settings.

This softly-softly approach is matched with an unobtrusive RAM footprint of 82MB and a 13-second impact on the startup time of our test laptop. That may sound steep, but remember that this is a low-end system. A desktop with a faster hard disk or a laptop with an SSD will see a much less noticeable impact on boot time.

In fact, our only speed-related complaint is with the Quick Scan feature: on our test system this took more than 15 minutes to complete. You can create a custom scan, however, specifying which file types to inspect, which drives to include and so forth.

In addition to real time and scheduled scanning, Avast Free Antivirus also includes an AutoSandbox feature that runs suspicious software in a virtualised environment. It's configurable, so you can decide how paranoid you want the software to be. Peer-to-peer downloads and IM attachments can be monitored, too, as well as scripts in browsers and PDF readers.

A distinctive feature is the Remote Assistance tool, which can be used to access someone else's desktop (with their permission). This partly duplicates

- 1 The Avast front-end is clear and easy to navigate
- 2 Threats are handled clearly and with a minimum of fuss
- 3 Although free, Avast is a highly configurable package



Windows' Remote Desktop capabilities, but no configuration is required, making it an appealing option if you're one of those lucky souls who provides technical support to friends and family.

This would be moot if Avast Free wasn't competent at the basic business of detecting malware, but it's a strong performer. Across two months of tests, Avast successfully protected against 98% of recent malware, including so-called zero-day malware attacks that hadn't previously been seen. That's a better performance than any other free antivirus tool – and outshines several paid-for suites. Avast also completely cleared up 79% of malware infections: that places it fifth in our field of 16 packages, with none of the contenders achieving a perfect score.

In the past we've picked AVG as the best free security package; this time Avast has showed itself to be lighter, friendlier and more capable. It isn't as powerful or as feature-filled as Bitdefender's commercial suite, but if you want a free tool to keep you safe, this is the one to choose.

PERFORMANCE ★★★★★  
FEATURES&DESIGN ★★★★★  
EASE OF USE ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★





## PERFORMANCE AT A GLANCE

100%

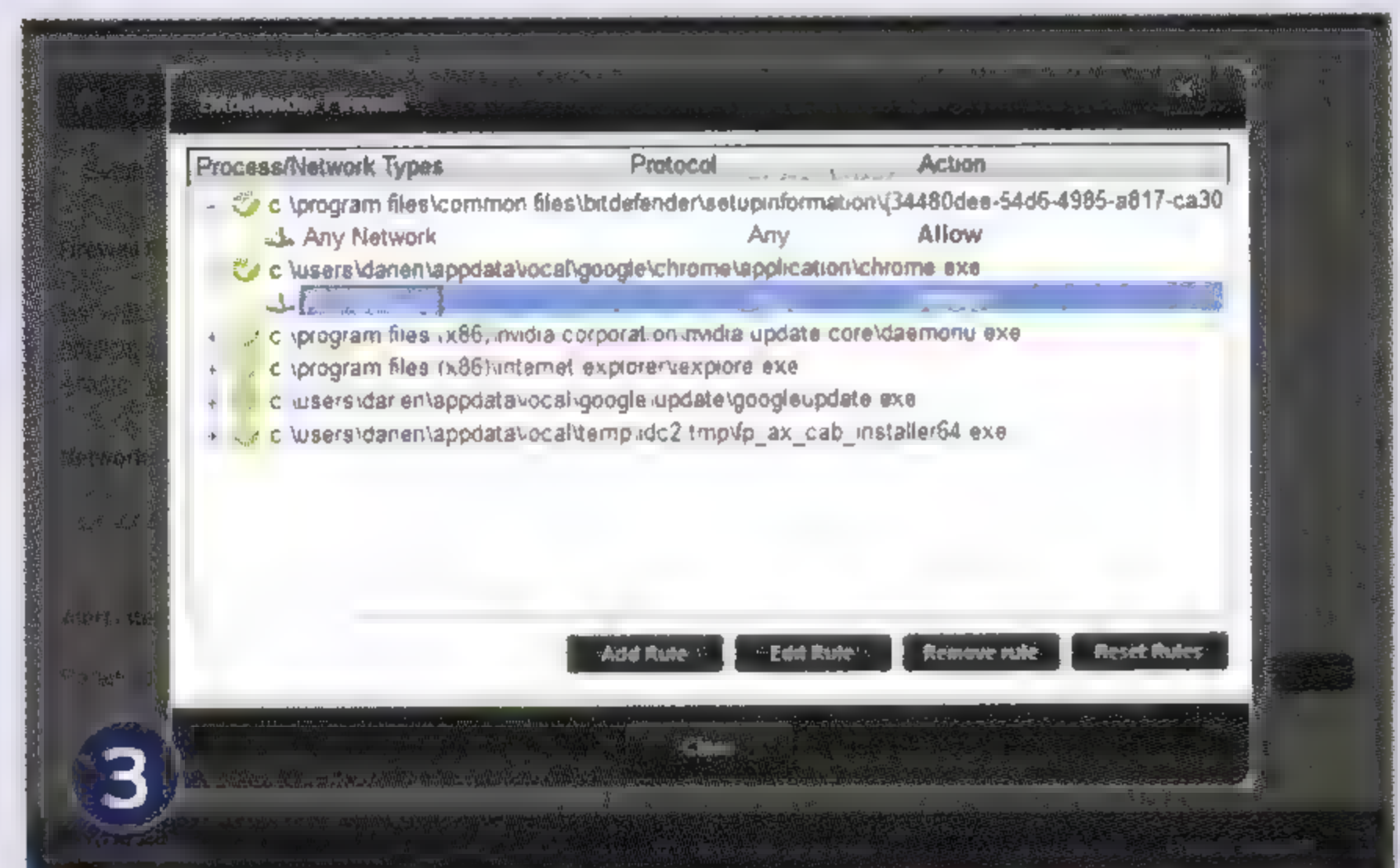
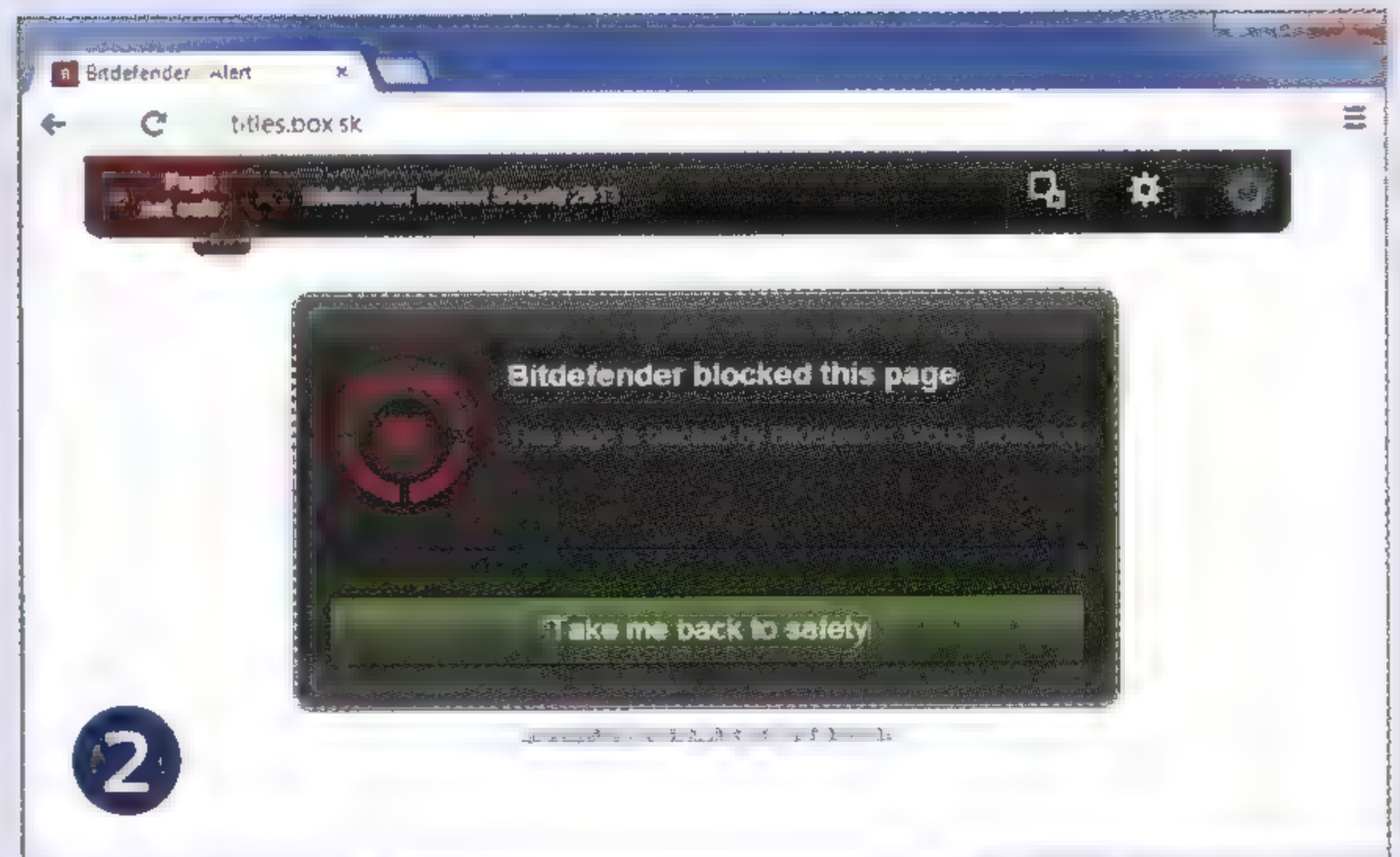
Zero-day malware protection

99%

Older malware protection

94%

Infected system repair



# BITDEFENDER INTERNET SECURITY 2013

A COMPREHENSIVE SET OF FEATURES, COUPLED WITH EXCEPTIONAL MALWARE DETECTION

**PRICE** \$104.95

**SUPPLIER** [www.bitdefender.com.au](http://www.bitdefender.com.au)

The Bitdefender website quotes \$104.95 for a three-PC licence for this software, but shop around and you can get it cheaper. It seems steep, but is competitive with similar suites and certainly delivers.

To start with, Bitdefender Internet Security 2013 achieved an exceptional 100% score across all of AV-Test's zero-day malware tests. That's a perfect protection record against never-before-seen threats – a feat equalled this month only by F-Secure and Trend Micro. Bitdefender fared spectacularly well against older malware, too, with a 99% protection rate.

The installer sets up a Linux-based rescue environment on your hard disk, so you can scan for malware from outside of Windows, without messing around with boot CDs. In tests, the software restored compromised systems to their pre-infection state with a 94% success rate.

Bitdefender ticks every feature box, from anti-spam to parental controls. Its firewall lets you create custom rules

by application or type of connection, and the intrusion-detection system flags attempts to install rogue drivers, tamper with Windows, or change system settings. A vulnerability scanner checks for missing updates to your OS and applications, and warns if accounts have weak passwords.

Browser integration is low-key, with no visible toolbar or buttons, but try to visit an untrusted website and an interstitial page appears, giving you the option of turning back or opening a sandboxed browser. On sensitive sites, such as banks and online retailers, you'll be prompted to use the new Safepay feature – a specially secured browser designed to lock transactions away from keyloggers, screen scrapers and man-in-the-middle attacks.

Bitdefender also places reputation indicators next to search results in Bing, Google and Yahoo, and you can have your Facebook wall and Twitter stream scanned for dangerous apps and links to keep you safe from social networking scams.

With so many features at hand, the interface is slightly convoluted. You have to scroll left and right to access

- 1 The main Bitdefender interface can be slightly daunting
- 2 Web protection is unobtrusive – until you visit a dodgy site
- 3 For technical users, there are plenty of configuration options



all of the controls, or to drill down into a particular area. Some features, including parental controls and the Safebox backup feature (with 2GB of free space), must be accessed via a separate web-based dashboard.

Yet this doesn't wreck the experience. Bitdefender defaults to its trademark Autopilot mode, silently protecting your privacy and safety with as little user interaction as possible. Novices can enjoy full protection without getting their hands dirty.

Resource efficiency isn't Bitdefender's strong suit. On our test laptop it added 16 seconds to boot time, with an undistinguished memory footprint of 172MB. We feel that's a reasonable compromise when you're receiving excellent malware protection, and a comprehensive feature set, at a price competitive with Bitdefender's paid-for rivals.

PERFORMANCE  
FEATURES&DESIGN  
EASE OF USE  
VALUE FOR MONEY



OVERALL





# BULLGUARD INTERNET SECURITY 2013

LOTS OF FEATURES, BUT THIS PACKAGE IS RESOURCE-HUNGRY AND PROTECTION IS AVERAGE

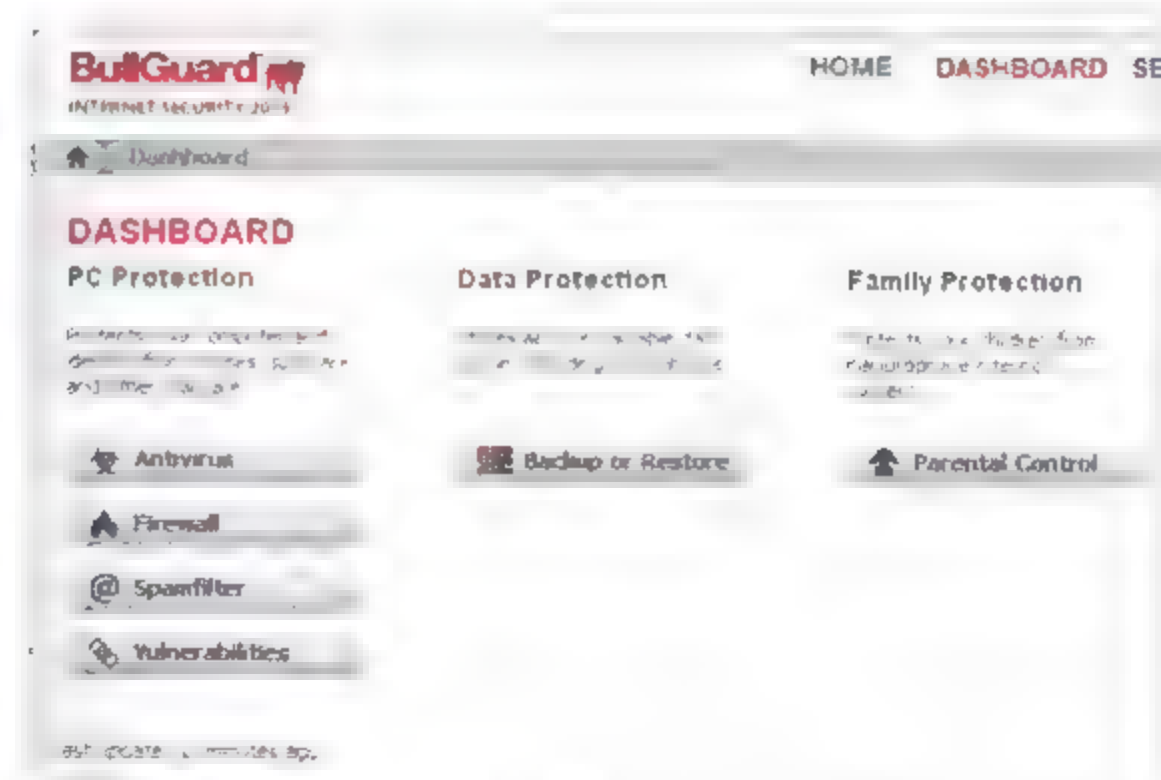
**PRICE** \$89.95

**SUPPLIER** [www.bullguard.com](http://www.bullguard.com)

**B**ullGuard was one of the first suites to offer online backup as standard, and still leads the pack in this regard; the 5GB you get is more than twice that of its rivals. Tucked away in the interface you'll also find a configurable two-way firewall, an email scanner with spam filter, and a game mode to suspend interruptions when you're running full-screen applications.

There's a vulnerability scanner for finding unpatched applications, and a tune-up wizard that removes unneeded files from your PC, disables unnecessary startup applications and services, and optimises the Registry. As well as categorising search results in Bing, Google and Yahoo, the web protection module scans links on Facebook and warns you of dodgy content.

Accessing and configuring these features isn't easy. The interface is



poorly organised: rather than guiding you through BullGuard's features, the too-simple three-button homescreen obscures them. Still, like Bitdefender, BullGuard does come with an "as quiet as possible" mode, so you can enjoy its protection without having to configure anything. We tested this by deliberately downloading a dangerous file and we saw the malware silently vaporise before our eyes, without any sort of notification from BullGuard.

When it comes to detecting malware, AV-Test found BullGuard to be an above-average performer, but not a winner. Its 95% protection rate against

zero-day threats puts it ahead of most free antivirus packages, but behind Bitdefender, G Data and Kaspersky. Its scores against known viruses and pre-infected systems were merely average.

A final disappointment came in our resource-usage tests. BullGuard's 17-second startup time was the slowest, and its 202MB memory footprint is above average. A 21-second quick scan was not enough to win us over.

On paper, BullGuard's feature list is attractive, especially at this price, but the package is too compromised overall for us to recommend. If you want a security suite that's packed with features, Bitdefender will give you better malware protection at a similar price.



# KASPERSKY INTERNET SECURITY 2013

HIGH LEVELS OF CONFIGURABILITY MAKE THIS A SOUND CHOICE – IF AN EXPENSIVE ONE – FOR TECHIES

**PRICE** \$99.95

**SUPPLIER** [www.kaspersky.com/au](http://www.kaspersky.com/au)

**T**he big new feature in this year's Kaspersky is Safe Money, which double-checks the authenticity and security credentials of a page, then optionally switches your session to a special sandboxed browser to ensure browser-hijacking malware can't interfere with your transaction.

For added protection, you can use the onscreen Secure Keyboard to enter sensitive information in a way that isn't as vulnerable to keyloggers. We suspect this will appeal mostly to those using touchscreens, however: typing with a mouse is hardly convenient.

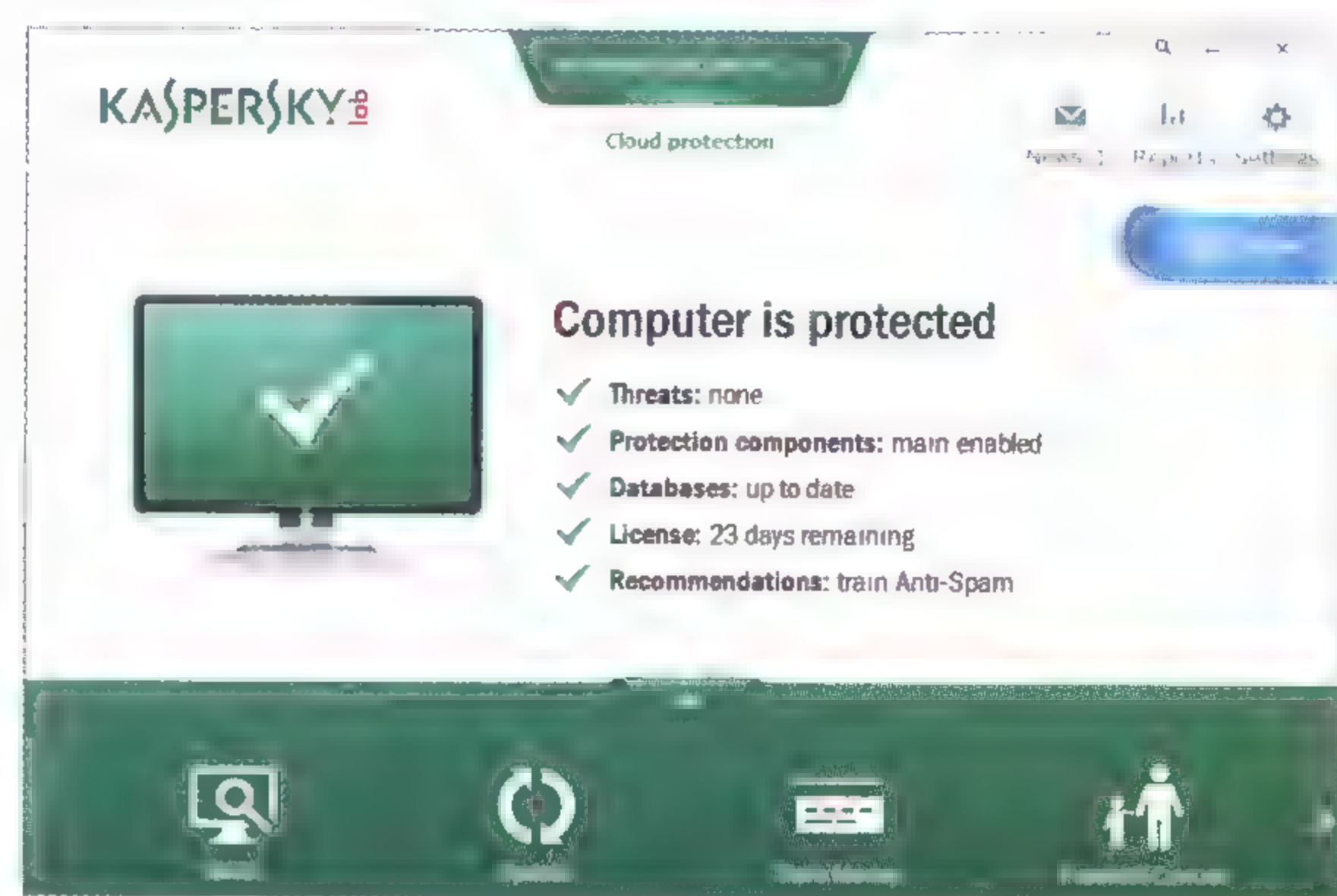
There's little else new here, but Kaspersky was already a well-equipped package, with both local and cloud-based features designed to watch over your files, emails, web pages, IMs, applications, network connections and more. These features are all customisable, too, making

Kaspersky Internet Security particularly appealing to hands-on techies.

Accessing the settings is a bit of a pain, however. A confusing set of arrows, links and buttons make navigating the 2013 interface for the first time an exercise in trial and error.

Historically, when it comes to malware tests, Kaspersky software places near the top of the table, and 2013 is no exception. AV-Test saw Kaspersky achieve a strong malware protection score of 99% across both established malware and brand-new exploits, and in 96% of cases it was able to fully clean up an infected system. We found Kaspersky fast, too, intercepting a dodgy download in a fraction of a second, and completing a quick system scan in half a minute.

Kaspersky's suite added only 11 seconds to the startup time of our test PC, but it occupied a lumbering 303MB of system memory, which could have a noticeable impact on an older PC. There's a literal price to pay, too: on a



one-year, three-PC basis, Kaspersky is the most expensive security suite here.

There's no beginner-friendly set-and-forget mode, as found in Bitdefender and BullGuard. However, for the more technically engaged, and those who like control, Kaspersky's suite remains an excellent choice.





# PANDA INTERNET SECURITY 2013

A WELL-EQUIPPED PACKAGE, BUT PERFORMANCE IS SO-SO AND THE INTERFACE IS UGLY

**PRICE** \$81.99

**SUPPLIER** [www.pandasecurity.com.au](http://www.pandasecurity.com.au)

It's quite possible that some people will find the colourful interface of Panda Internet Security 2013 attractive and tasteful. They'll probably be in the minority, however: we think it's a mess. It's like having your security provided by a bad PowerPoint presentation.

To be fair, the buttons reflect the wide range of components on offer. From the main interface you can access firewall settings, parental control reports, tech support and more. Click on Backup Copies and you can set local backup or online archiving.

You can launch a virtual keyboard – helpful for entering sensitive information if you suspect malware is monitoring your physical keys – or download a secure browser. You can also immunise connected USB devices against infection with one click,

replacing AutoPlay information with a read-only placeholder that can't easily be overwritten by USB-borne malware.

Alas, although well stocked with features, Panda turned in a mixed performance in AV-Test's malware protection tests. Against established threats it produced a perfect 100% protection score, but when it came to brand-new exploits Panda protected against only 82% of attacks, a score worse than any other paid-for suite. A 67% success rate at repairing infected PCs doesn't fill us with confidence either; here, only PC Tools did worse.

The suite isn't exactly lightweight, adding 273MB to our system footprint, and slowed down startup time by 12 seconds. However, scanning is fast; a quick system scan completed in six seconds. When we tried downloading a dangerous file, a notification instantly faded in at the bottom of the screen confirming it had been blocked, with no further action needed on our part.



Panda Internet Security 2013 is one of the cheaper options in this Labs. The price doesn't look bad for such a feature-packed suite but malware detection isn't great, and, if you ask us, this eyesore isn't worth it.

PERFORMANCE	★ ★ ★ ★ ★
FEATURES&DESIGN	★ ★ ★ ★ ★
EASE OF USE	★ ★ ★ ★ ★
VALUE FOR MONEY	★ ★ ★ ★ ★
<b>OVERALL</b>	★ ★ ★ ★ ★

# TREND MICRO TITANIUM INTERNET SECURITY 2013

A POWERFUL AND LIGHTWEIGHT SUITE THAT DESERVES SERIOUS CONSIDERATION

**PRICE** \$99.95

**SUPPLIER** [www.trendmicro.com.au](http://www.trendmicro.com.au)

Trend Micro's 2012 internet security suite was our Labs winner last year, and it remains a persuasive contender. This year, against both brand-new and older malware, it delivered flawless protection – a feat unequalled by any other package. It excelled in AV-Test's repair tests, too, with a 90% success rate bettered only by Bitdefender.

In terms of features there isn't much new, but you do get tools to help keep you safe on social networks. Links on Facebook, Twitter, Google+, LinkedIn and various other services are now scanned and flagged if they lead to a dodgy destination. There's also a new Check My Privacy button that pops up within Facebook. Click it and Trend Micro scans your settings and warns if you're sharing

more than you may intend to.

All of last year's features remain, too, including a rescue-disc builder, a secure file deletion tool, a parental control system, a simple set of system tune-up tools and a graphical reports module. The interface, however, has been overhauled. A tabbed front-end – in bold black and white – replaces the red and grey design of previous editions. We think it's an improvement, both in terms of aesthetics and accessibility.

As before, there's no firewall. Trend Micro evidently considers the built-in Windows one to be adequate, and we've no reason to disagree. This parsimonious approach appears to help keep system load low. Trend Micro Titanium Internet Security was one of the quickest suites to start up, adding a mere nine seconds to boot time, and its memory footprint of 84MB is one of the lightest here. When we tested the suite's reflexes



by accessing a malicious file from the web, Trend Micro severed the network connection before the file had even finished downloading.

This year we've chosen Bitdefender as our overall Labs winner, because it has a small edge over Trend Micro on features, and is available at a comparable price. Trend Micro Titanium Internet Security is an excellent piece of security software, though, and a worthy runner up in the paid-for AV stakes.

PERFORMANCE	★ ★ ★ ★ ★
FEATURES&DESIGN	★ ★ ★ ★ ★
EASE OF USE	★ ★ ★ ★ ★
VALUE FOR MONEY	★ ★ ★ ★ ★
<b>OVERALL</b>	★ ★ ★ ★ ★



# AVG ANTIVIRUS FREE 2013

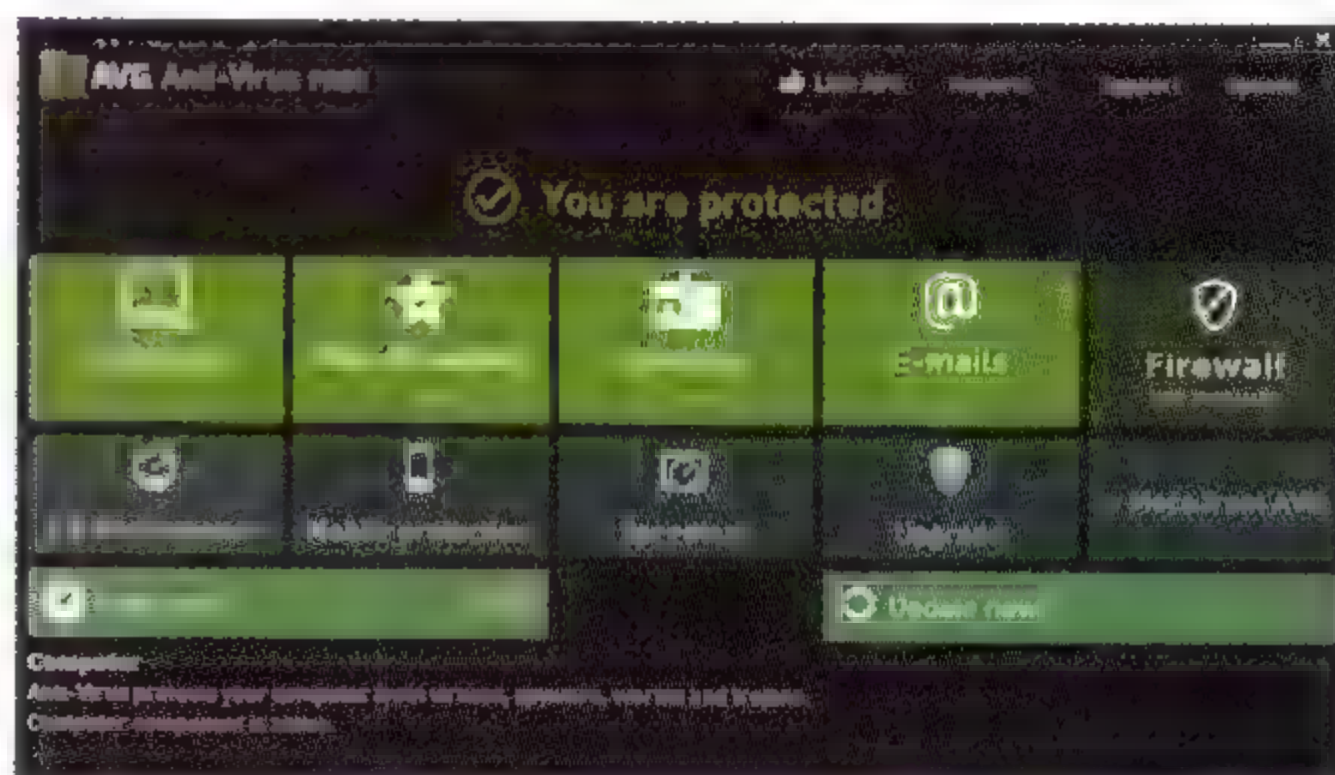
**PRICE** Free  
**SUPPLIER** [www.avgfree.com.au](http://www.avgfree.com.au)

In the past few years, we've seen AVG consistently achieve better protection than its free rivals. This year, however, a mediocre 91% protection rate against zero-day threats puts it some way behind Avast's 98%.

That might be excusable if AVG AntiVirus Free were otherwise a friendly and well-featured package – but sadly, the opposite is true. Although this latest version of the software sports a new Windows 8-inspired interface, it's still frustratingly unclear which buttons lead to genuine features of the software, and which

are merely there to steer you towards AVG's paid-for products.

In fact, the core features consist of only a virus scanner, an email scanner and a browser plugin. In other words, not only is AVG



less effective than Avast, it's also shorter on features, although its 272MB memory footprint is more than three times as heavy.

We'd like to think that stiffening competition will prompt AVG to come back next year with a streamlined package that's capable of retaking the crown. For now, though, we'd steer clear.

PERFORMANCE	★★★★★☆☆
FEATURES&DESIGN	★★★★★☆☆
EASE OF USE	★★★★★☆☆
VALUE FOR MONEY	★★★★★☆☆
<b>OVERALL</b>	★★★★★☆☆

# AVIRA FREE ANTIVIRUS 13

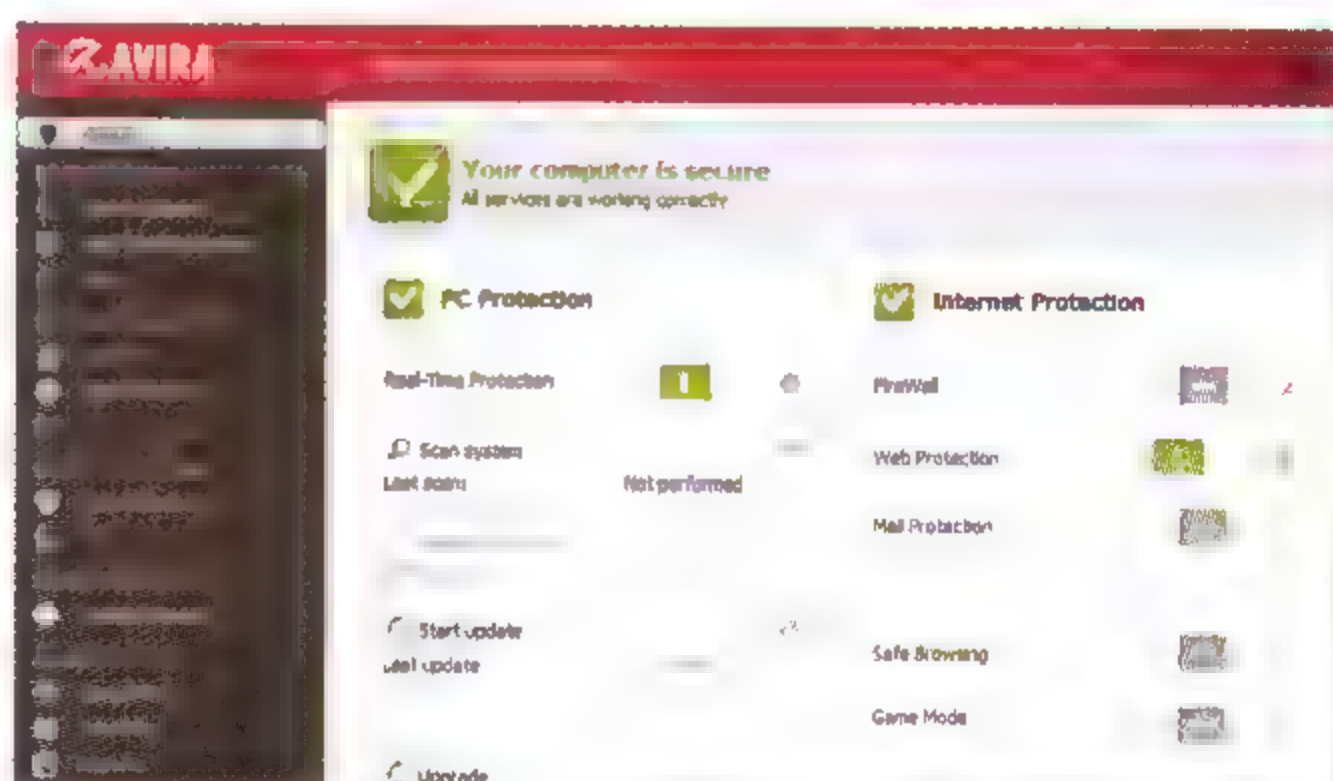
**PRICE** Free  
**SUPPLIER** [www.avira.com](http://www.avira.com)

Avira's latest interface is straightforward and usable – but in this free version, most of the features don't actually work and are there only to tempt you to upgrade to the paid-for suite.

The package also ties its web protection into an Ask.com toolbar that's installed by default for Chrome, Firefox and Internet Explorer. Still, the suite no longer pops up a big advertisement when it updates, so overall it's less intrusive than previous versions.

It's nimble, too, adding a creditably low nine seconds to boot time and completing a quick system scan in 14 seconds. When we tried

downloading a malicious file, the software warned us immediately – although, as well as removal options, the notification included a shameless link to paid-for support, which clearly wasn't needed in this case.



Ultimately, though, it isn't the advertising that lets Avira down, but the test results. AV-Test saw Avira achieve a low 84% detection rate against brand-new threats, and a similar overall repair rate of 85%. That puts its protection some way behind Avast and AVG, making it an unattractive choice.

PERFORMANCE	★★★★★☆☆
FEATURES&DESIGN	★★★★★☆☆
EASE OF USE	★★★★★☆☆
VALUE FOR MONEY	★★★★★☆☆
<b>OVERALL</b>	★★★★★☆☆

# ESET SMART SECURITY 5

**PRICE** \$89.95  
**SUPPLIER** [www.eset.com.au](http://www.eset.com.au)

Version 6 of Eset Smart Security is in the pipeline, but for now last year's version 5 remains current. It doesn't feel outdated, though: the front-end is clear and airy, and the software makes modest demands on your system, adding only eight seconds to our test system's boot time and a light 111MB to our system's memory footprint. That's impressive, considering the package includes a customisable firewall, parental controls and automatic monitoring of web and email traffic.

If you want to configure these features, you'll find simple on/off switches in the main

UI. Disable a feature and, optionally, it will be automatically re-enabled after a specified time – a nice way to ensure you're not accidentally left unprotected. Click on the unobtrusive "advanced setup" link and you'll find a bevy of technical options to satisfy expert users.

We liked the way Smart Security responded when we attempted to download a dangerous file: the internet connection was automatically severed, and a tasteful notification appeared at the bottom of the screen. We didn't like the "smart scan", which took almost 40 minutes to run on our test system though: if you want to check quickly that your PC is clean, you'll have to set up a custom scan.

However, our serious concern is Eset's performance in AV-Test's latest malware detection tests. In the past Smart Security has often scored highly, but this month it achieved only an 86.5% success rate against zero-day threats, and a similar repair rate for infected systems. Those are disappointingly mediocre scores – so while Eset Smart Security 5 has its strengths, we can't recommend it right now.

PERFORMANCE	★★★★★☆☆
FEATURES&DESIGN	★★★★★☆☆
EASE OF USE	★★★★★☆☆
VALUE FOR MONEY	★★★★★☆☆
<b>OVERALL</b>	★★★★★☆☆



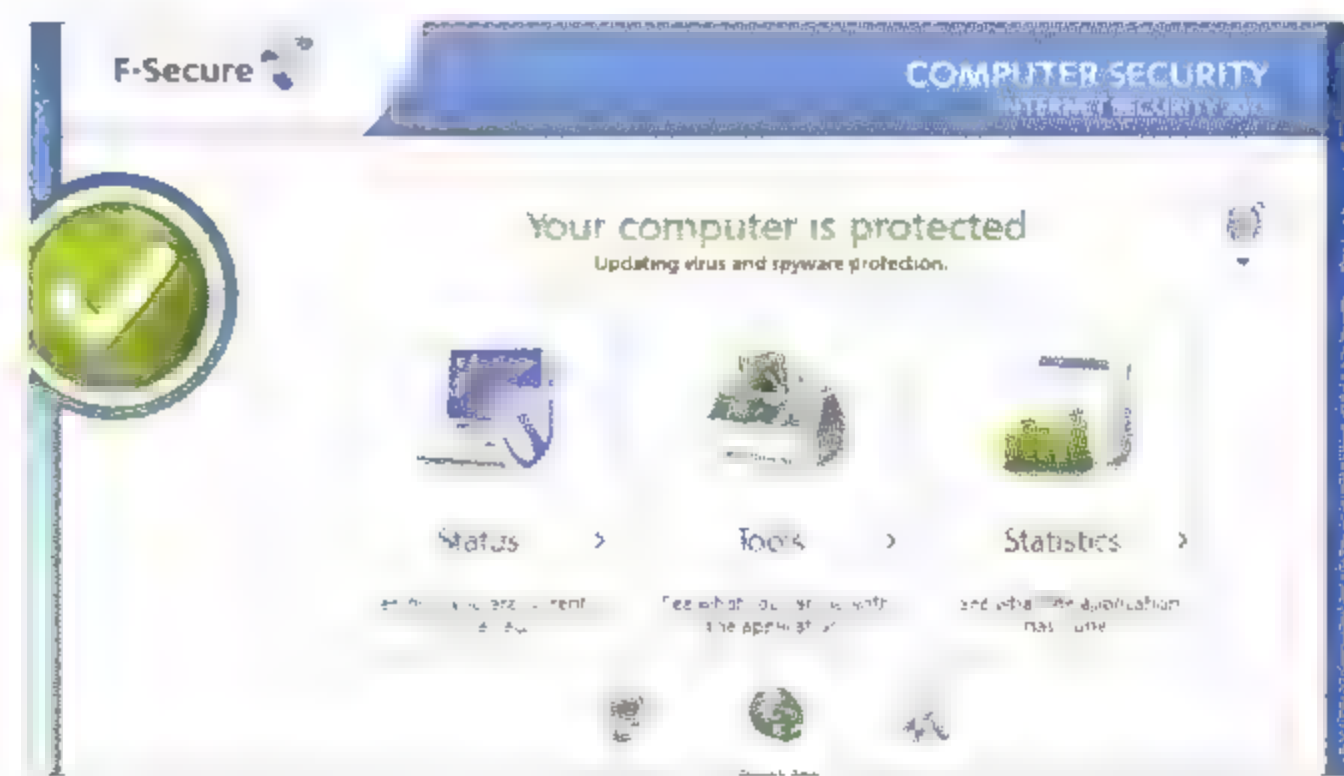
# F-SECURE INTERNET SECURITY 2013

**PRICE** €59.99  
**SUPPLIER** [www.f-secure.com](http://www.f-secure.com)

F-Secure's features are split across two interfaces: Computer Security and Online Safety. This division doesn't help you find things, and while the interfaces are attractive, they aren't perfectly intuitive: headings such as Tools and Tasks are too vague for our liking.

Such complaints are somewhat mitigated by the package's excellent malware detection abilities. AV-Test found F-Secure stopped 100% of zero-day attacks, and managed to completely clean up malware-inflicted damage on 85% of infected systems.

When we tried to download a dodgy file, F-Secure blocked the network connection so quickly the malware never touched our hard disk. As a cherry on top, the software also completed a quick scan in only three seconds.



The software's impact on system resources is average, with 15 seconds added to boot time and a memory footprint of 179MB. That's disappointing, especially as the suite doesn't include its own firewall. Gripes aside, though, F-Secure Internet Security 2013 is a clean and effective suite.

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
EASE OF USE	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

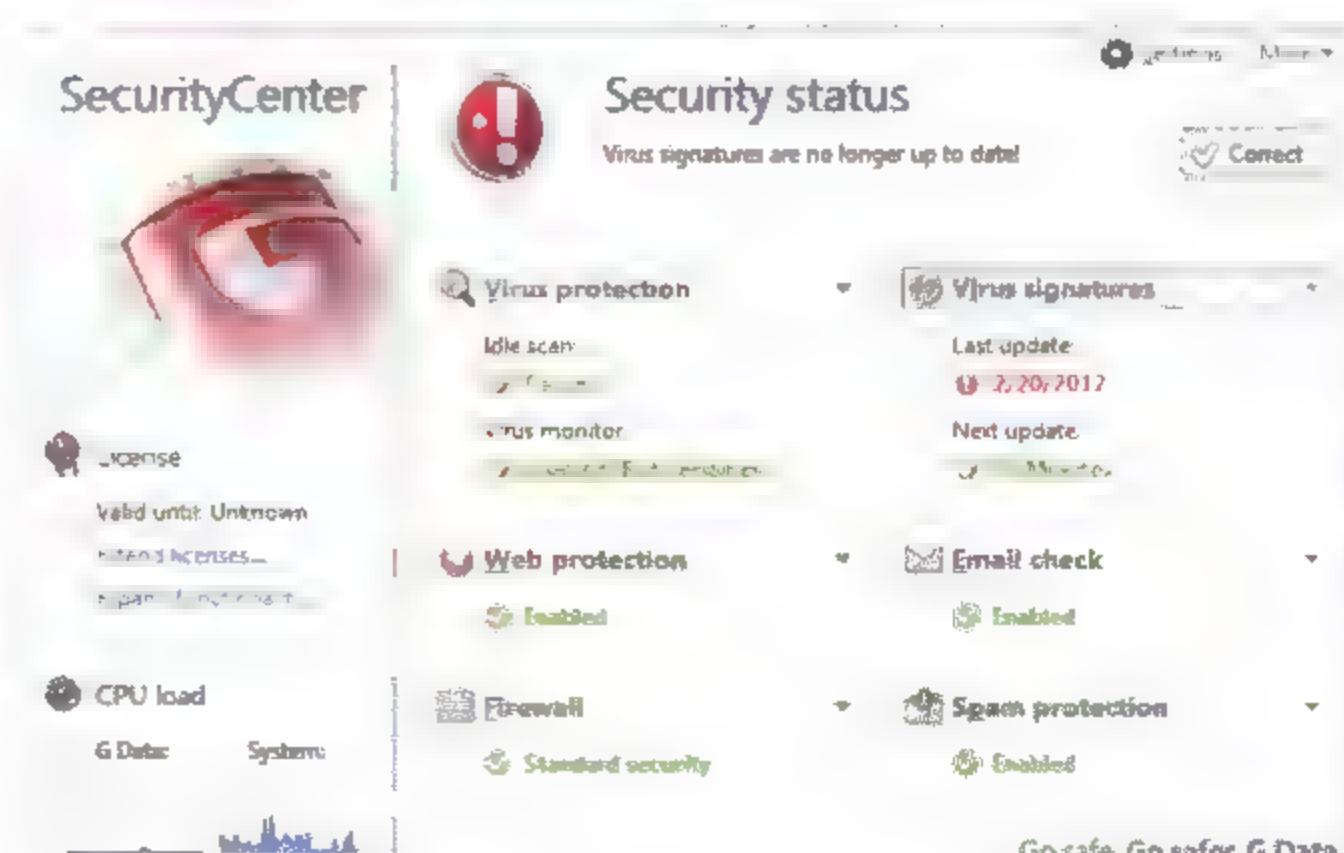
# G DATA INTERNET SECURITY 2013

**PRICE** \$63.25  
**SUPPLIER** [www.gdatasoftware.com](http://www.gdatasoftware.com)

G Data uses two security engines in parallel, and this helps it do an excellent job of detecting malware: AV-Test found it stopped 99% of zero-day threats, and achieved a perfect score with older viruses.

Naturally, two engines weigh more heavily than one. G Data's 362MB footprint is the largest this month, and scanning is slow too. A "quick" scan took more than four minutes, and when we downloaded a dangerous file G Data warned us only five seconds later. This delay makes the suite feel unresponsive.

Still, the UI is easy to configure, and protection extends to browsers and IM applications. You can also install parental controls and a secure file deletion tool. If you



have a badly infected system, you can create a boot CD for offline repair, too.

Be warned, the software could only completely undo infections in 73% of cases; there's no backup, no data protection and no game mode either. G Data offers respectable protection, but you can do better.

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
EASE OF USE	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

# GFI VIPRE INTERNET SECURITY 2013

**PRICE** (Up to 10 PCs), \$69  
**SUPPLIER** [www.vipre.com.au](http://www.vipre.com.au)

GFI is primarily known for business security, and the standard ten-PC Vipre licence is clearly intended to cover a small office. The feature list is businesslike too, offering no parental controls and no game mode. Most other mainstream features are here, though, including a firewall that provides plenty of options and statistics for those who like to keep an eye on their connections. The interface looks rather cold and severe, but it's clear and simple to get around.

One distinctive feature of GFI Vipre is Easy Update, which checks for updates to all the various bits of software on your PC to ensure

vulnerabilities are patched. That's a good idea, as these days it's often web browsers and plugins that are targeted by exploits, rather than the operating system itself. The PC Explorer utility provides a rundown of your system processes, startup applications and the like.

The software is fast and lightweight – in a field of 16 suites, it came sixth in RAM usage and fourth for boot speed. A quick scan was completed in a nippy seven seconds, and downloading malware prompted an instant response: the file was blocked, and at the click of a button we saw extensive information about the threat and how it was detected.

Sadly, Vipre's malware detection scores

were below average, with 15% of zero-day malware missed. On the plus side, even if you don't have ten PCs to protect, it's relatively well priced. There is no three system license option, but the ten system version is much cheaper than other three PC offerings from competitors. If you don't need to protect so many systems, a single-PC licence costs a mere \$48.99.

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
EASE OF USE	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



# MCAFEE INTERNET SECURITY 2013

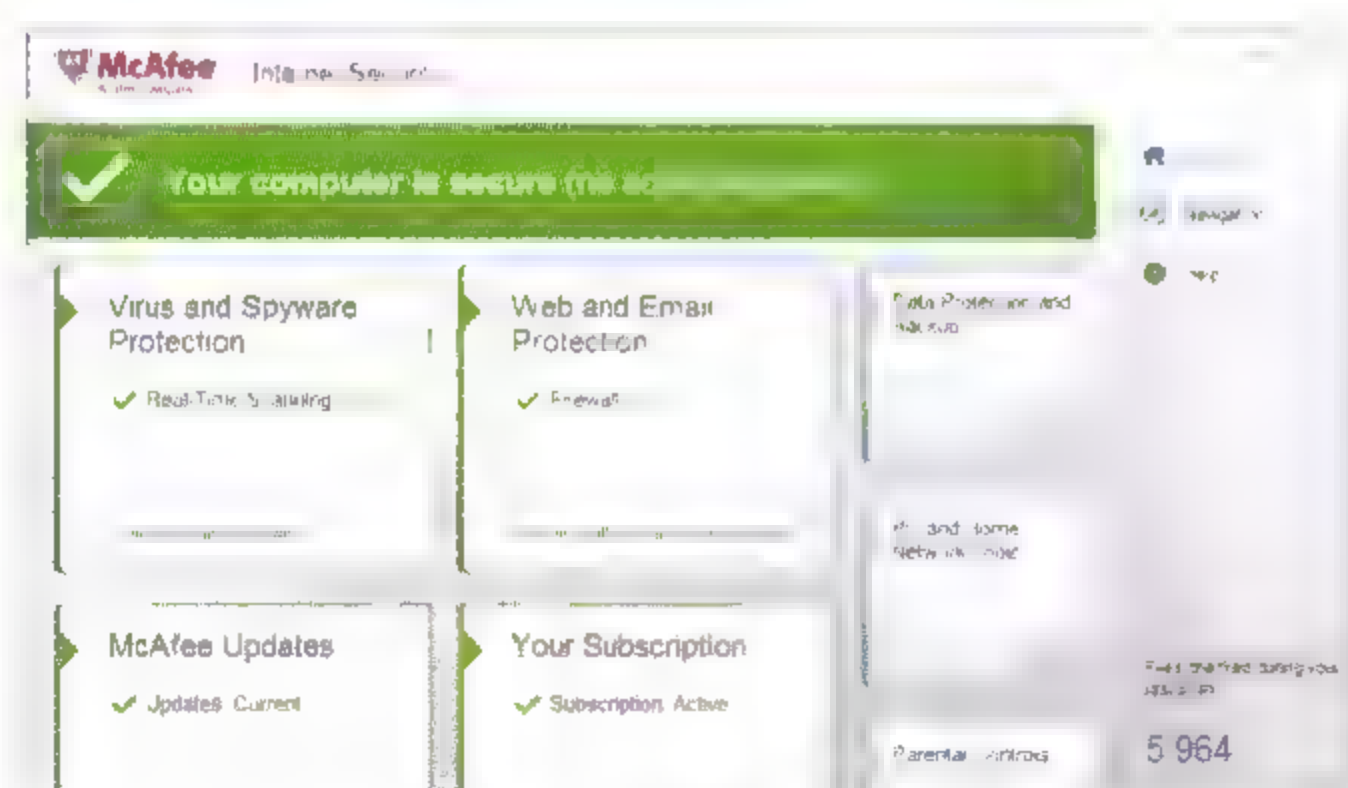
**PRICE** \$99.95

**SUPPLIER** [www.mcafee.com.au](http://www.mcafee.com.au)

McAfee's 2013 suite brings a new, tiled front-end that echoes the Windows 8 style, while still looking at home on Windows 7. This makes it easy to access all program settings and features, which include McAfee's renowned SiteAdvisor web protection system, plus a vulnerability scanner and secure file deletion. Unusually, there's also online backup, with 1GB of included space – something most suites offer only in expensive, premium editions.

Unfortunately, this promising feature set is let down by sub-par malware detection and

repair abilities. AV-Test found the package protected against only 83% of zero-day threats, and was unable to fully repair a third of infections. We found it slow, too: a quick scan took almost seven minutes, and when we tried downloading a dangerous file the



only immediate warning was a browser error, with a notification appearing ten seconds later.

In addition, McAfee's impact on system performance was on the wrong side of average, adding 15 seconds to boot time and 175MB to our RAM footprint. It adds up to a package that's best avoided.



# MICROSOFT SECURITY ESSENTIALS

**PRICE** Free

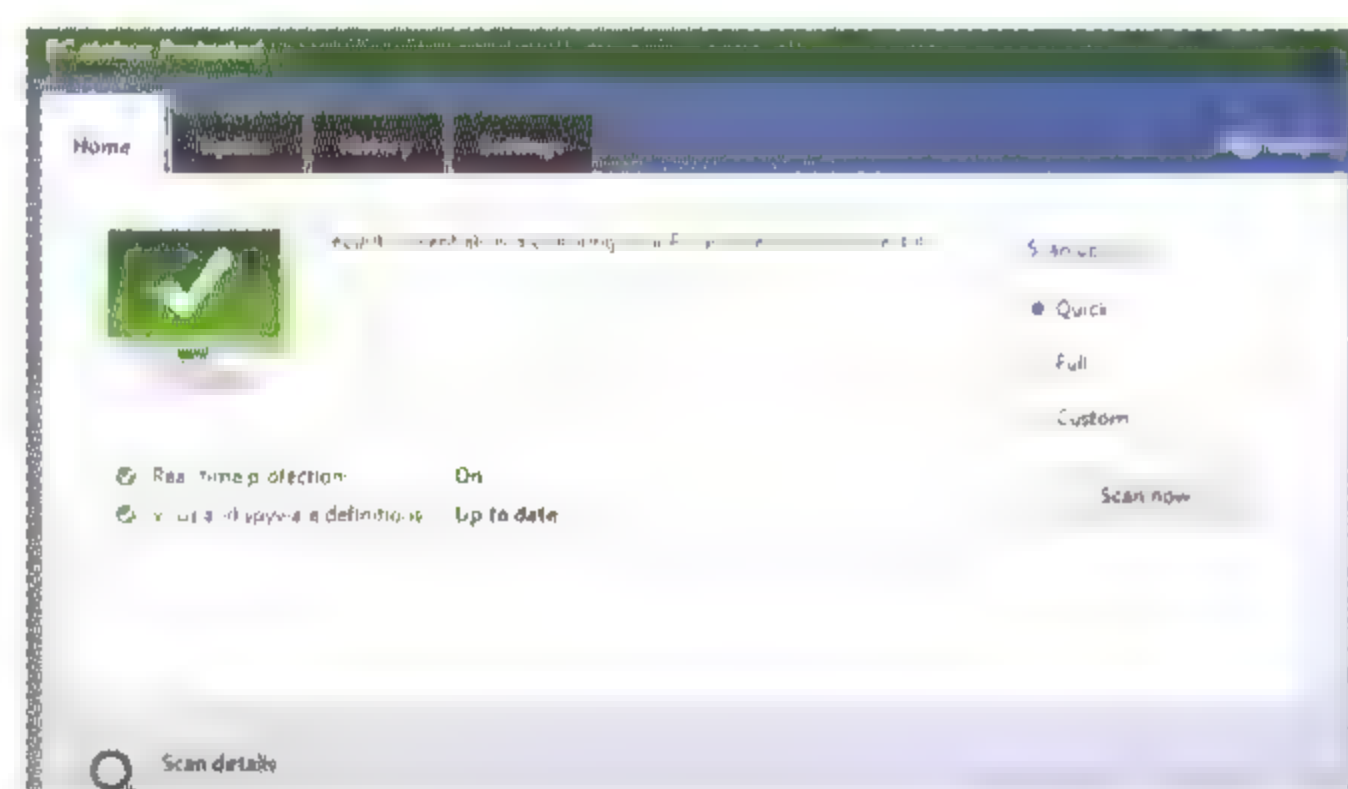
**SUPPLIER** [www.microsoft.com](http://www.microsoft.com)

True to its name, Security Essentials covers only the bare basics of malware protection. You might think that means less bloat slowing down your system, but in fact Security Essentials added 13 seconds to boot time and 125MB to our system's RAM usage, making it heavier than some of the fully featured suites.

The package's simplicity does make it easy to use. There's pretty much nothing to configure: when malware is discovered, a pop-up gives a warning and deals with it automatically. You can check the details

and unblock detected items from the main program interface.

Security Essentials gets its database updates via Windows Update, so it receives new signatures infrequently compared to other suites. This may partly explain why it



stopped only a shocking 67% of zero-day threats in AV-Test's detection tests, and even missed 10% of more established threats. This isn't what we'd call peace of mind.

If you're looking for free protection, consider Avast Free Antivirus instead: it's a more lightweight program and provides much better protection.



# NORTON INTERNET SECURITY 2013

**PRICE** \$99.99

**SUPPLIER** [au.norton.com](http://au.norton.com)

Norton's 2013 suite brings a new front-end that, with its big borderless tiles, has clearly been inspired by Windows 8. It's more accessible than last year's model, but still not perfectly clear: several prominent links (such as Mobile, Online Family and Backup) don't actually refer to built-in features, but steer you off to separate Symantec services. You're left uncertain whether you've signed up for one product or several.

Features that are integrated into the suite include a Facebook wall scanner and Symantec's Identity Safe password manager: these can be accessed via a (rather ugly)

browser toolbar that's automatically installed in Chrome, Firefox and Internet Explorer. With dozens of customisable settings, you can configure most aspects of Norton's behaviour to suit your preferences, although this may overwhelm beginners.

As if to head off any suspicion of bloat, Norton's performance monitor remains in prime position, showing key system events and resource usage. The System Insight tool also digs into your processes and startup items to identify those that might gobble up CPU power – as well as those that aren't trusted by the Norton community. We found Norton itself added 13 seconds to our test system's boot time, which is merely average; but the software's overall 51MB RAM

footprint was commendably low, and a far cry from the resource-heavy Norton of old.

AV-Test found Norton Internet Security 2013 stopped 96% of zero-day threats and fully repaired a decent 84% of infected systems: these aren't scores that place it among the winners, but they're perfectly respectable. Overall, Norton Internet Security remains a decent package, priced quite similarly to the competition.





## Windows 8 security

If you've upgraded to Windows 8, you might be wondering whether your PC is still vulnerable to the same malware as Windows 7, and to what extent our advice in this Labs applies to you. The short answer is that Windows 8 is safer than its predecessor – but that doesn't necessarily mean you can forget about security software.

One big security advantage of Windows 8 is a system called Secure Boot, which ensures Windows 8 systems will start up only from a signed Windows bootloader. This shuts out rootkits – infections that evade detection by taking hold of your PC before the operating system loads. If you want to install Linux or a different version of Windows, you can authorise additional bootloaders within the UEFI BIOS or disable Secure Boot altogether.

Another enhancement is a feature called

SmartScreen, which warns if you download a file that's known to be malicious, or one that comes from an untrusted source. Originally a feature of Internet Explorer, SmartScreen now works at the operating system level, so you'll receive its warnings no matter which browser you use.

These new features may not keep Windows 8 users 100% safe, however. Secure Boot needs support within the UEFI BIOS, so if you've upgraded an older Windows 7 system you won't gain any benefit. And virus writers have a habit of finding creative ways to get around protections such as SmartScreen. In other words, you still need antivirus software.

Happily, Windows 8 improves on its forebears here, too, by coming with security software preinstalled. The tool is called Windows Defender, just like the anti-

spyware software that's included with Vista and Windows 7, but in Windows 8 it detects spyware and malware of all types. Effectively, it's a rebadged version of Security Essentials.

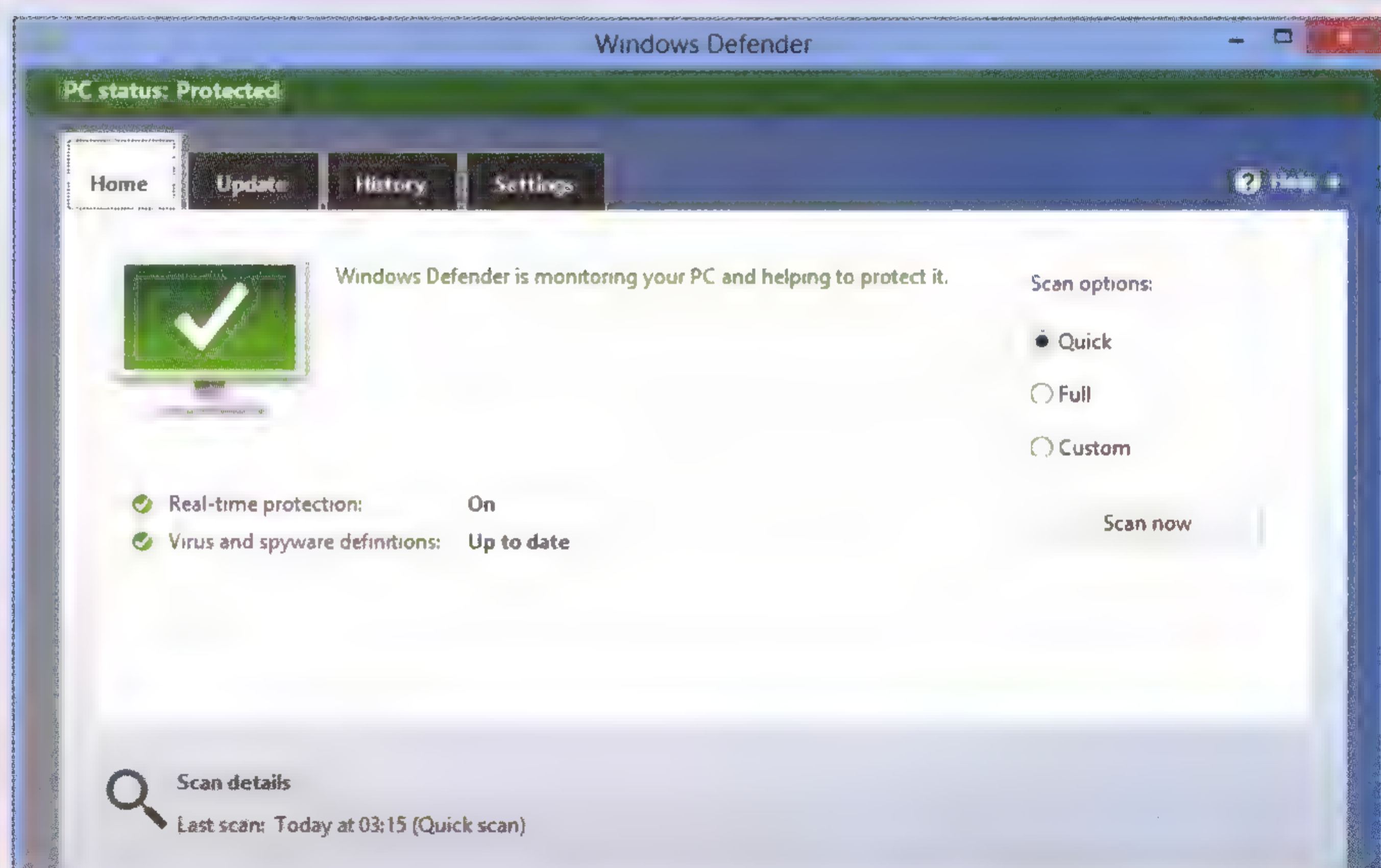
### “Secure Boot needs support within the UEFI BIOS”

This means that, if you so wish, you can forget about security completely and still enjoy some protection from malware. To be sure, if you do this you're in a much safer position under Windows 8 than you would be on any other version of Windows.

All the same, Microsoft's anti-malware engine managed to protect AV-Test's systems against only 67% of zero-day malware in this month's tests – a much lower score than any other package, including its free rivals. Third-party security suites also offer features that aren't included in Windows 8, such as browser integration, personal data protection and password management.

So, yes: the need for third-party security software is less urgent for Windows 8 than it is for previous versions of Windows. But it's still well worth looking into third-party options. Almost all the suites on test this month are certified as compatible with Windows 8, and a few developers have even gone so far as to remodel their interfaces to fit the Windows Store look, to ensure their software is right at home on the new OS.

◀ Don't be confused: the Windows 8 version of Windows Defender is really a renamed version of Security Essentials



## PC TOOLS INTERNET SECURITY

PRICE \$79.99

SUPPLIER [www.pctools.com](http://www.pctools.com)

PC Tools' suite hasn't visibly changed in the past year. Its jolly blue and green interface is still one of the friendliest-looking front-ends around, with big switches on the main page that make it easy to turn different types of protection on and off, and to launch scans.

Beyond this very basic level of control, however, tweaking settings is fiddly, thanks to the way the software's functions are split up across nine “guards”. Novices may also be put off by the need to make decisions about firewall and malware alerts, as there's no silent protection mode here of the sort

offered by Bitdefender and BullGuard. There isn't even much useful guidance from the program: during our testing, PC Tools Internet Security raised the alarm over an “infection” that, on closer inspection, turned out to be merely a cookie. Yes, online tracking is a nuisance, but there's no need to alarm the user unduly.

PC Tools doesn't offer a free trial of the full suite – only a cut-down demo version – so it's only after shelling out that you discover the complete product eats up a hefty 333MB of RAM. Installing it on our test PC also added a sluggish 14 seconds to boot time. In AV-Test's malware tests, PC Tools' software successfully blocked 94% of zero-day malware, putting it slightly below the

middle of the pack, and in the virus repair test it ranked last, fully repairing only 64% of systems.

PC Tools Internet Security isn't a disaster, but it isn't the highly capable, beginner-friendly suite it may first appear. It may be on the cheaper end of the AV scale but several of its rivals are more efficacious and easier to get along with.

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
EASE OF USE	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	<b>★★★★★</b>



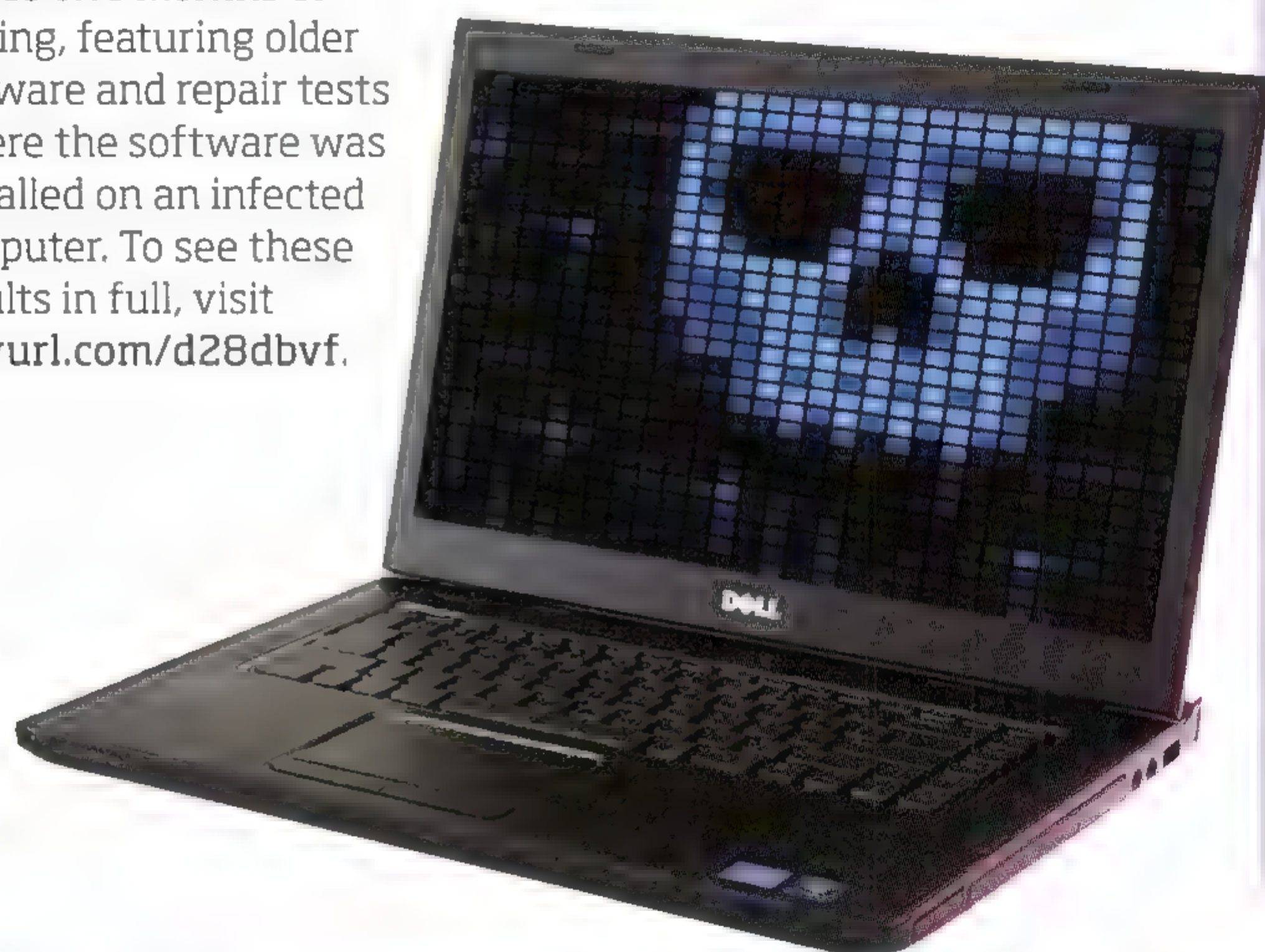
# Results

**A**s our graphs below show, there's no real correlation between the demands each suite places on your system and the range of features it includes. Microsoft Security Essentials, for example, is a basic package, yet its resource usage proved decidedly middle-of-the-road this month.

Microsoft's protection rate was nothing to write home about either, especially when we look at protection against zero-day threats – that is, brand-new, never-before-seen attacks. To deal with dangers such as these, a package must be smart enough to recognise an attack in itself, without relying blindly on a database of known bad file signatures.

Admirable performances from Avast, Bitdefender, F-Secure, G Data, Kaspersky and Trend Micro give us confidence these packages can protect us from the unknown. With the rest, there's a concern that newly developed attacks could sneak under the software's defences before security researchers have a chance to analyse the threat and rollout a signature update.

The AV-Test data on which our performance scores are based includes test results for several additional security packages that couldn't be included in this Labs, and breaks down performance across two months of testing, featuring older malware and repair tests where the software was installed on an infected computer. To see these results in full, visit [tinyurl.com/d28dbvf](http://tinyurl.com/d28dbvf).



## VIEW FROM THE LABS

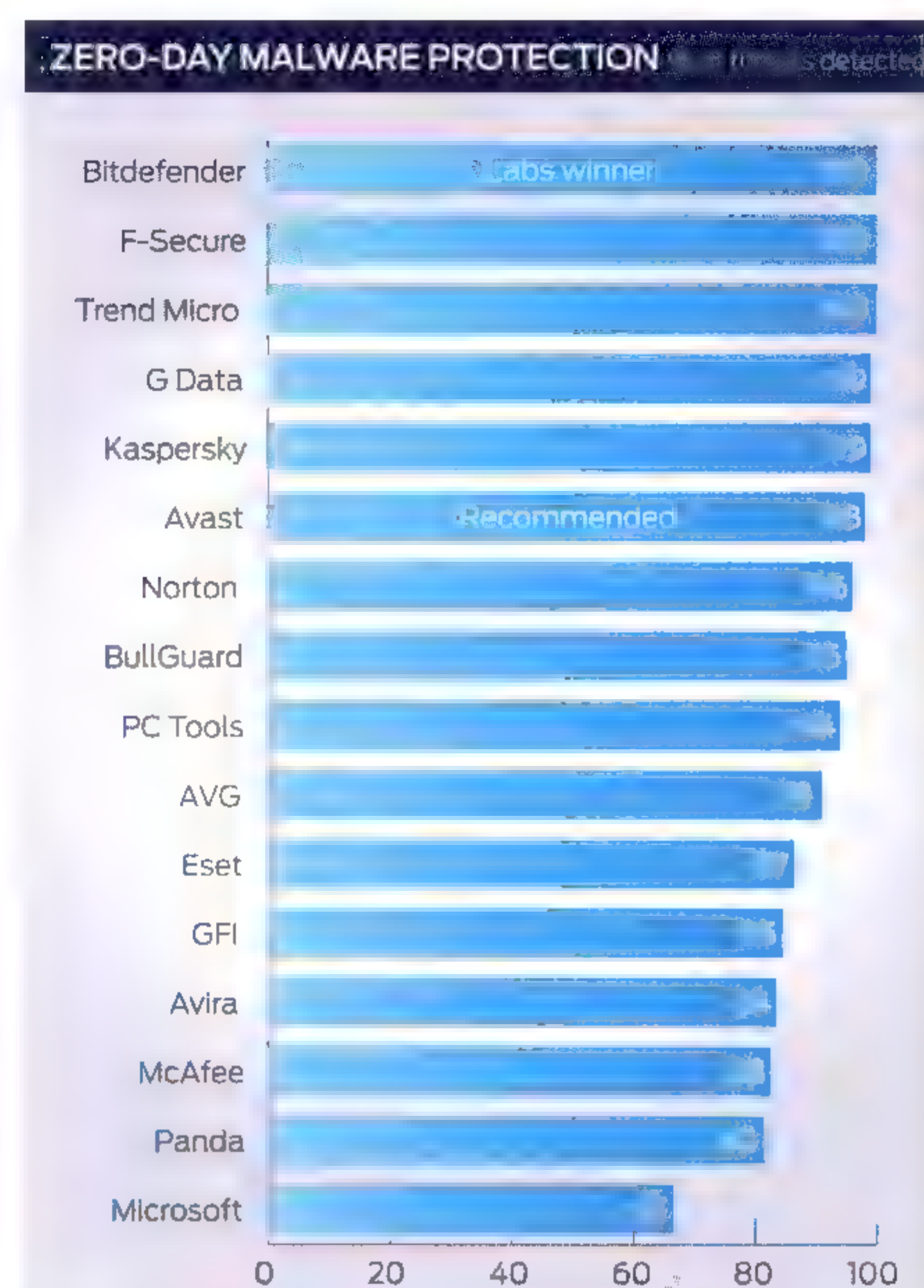
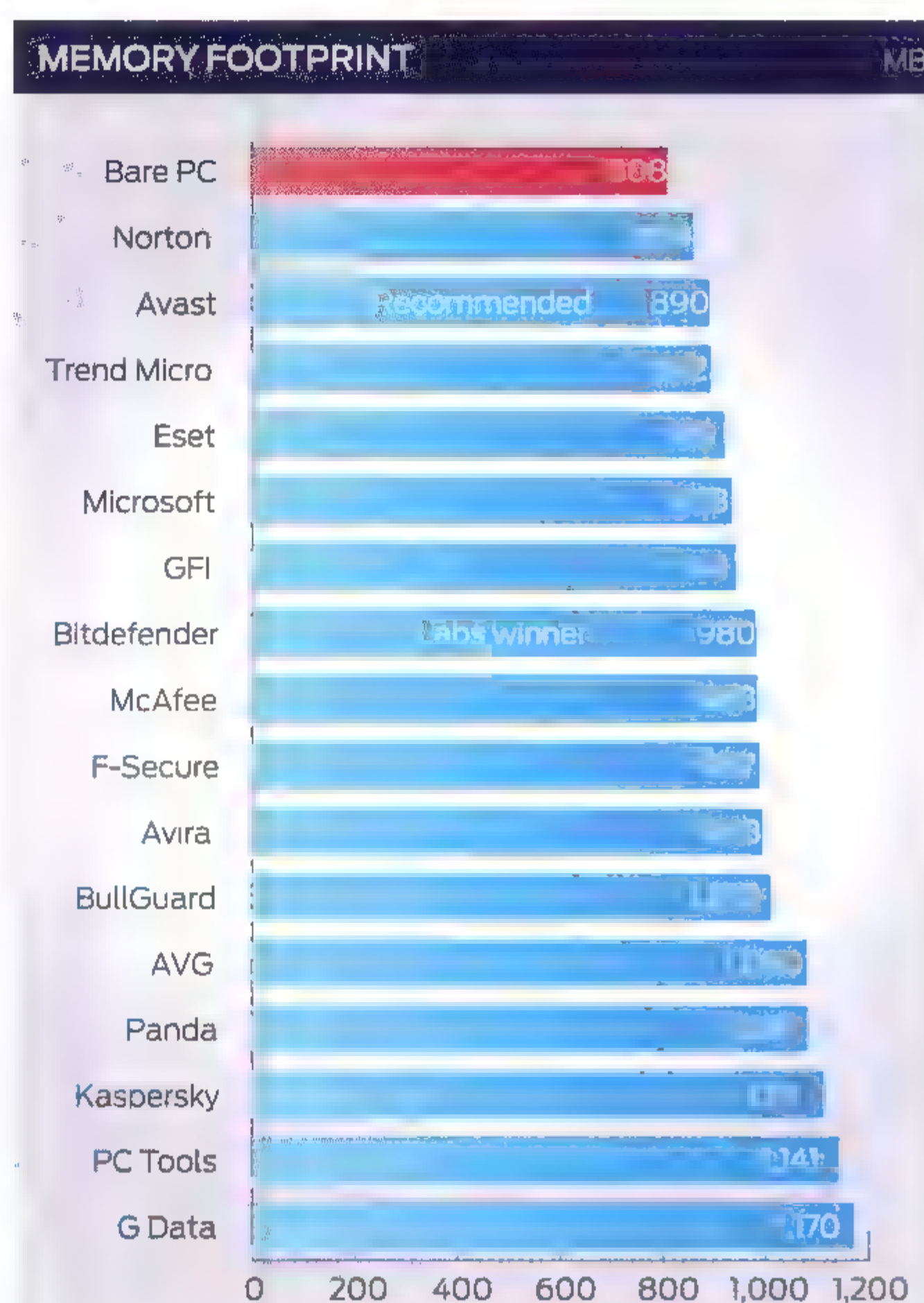
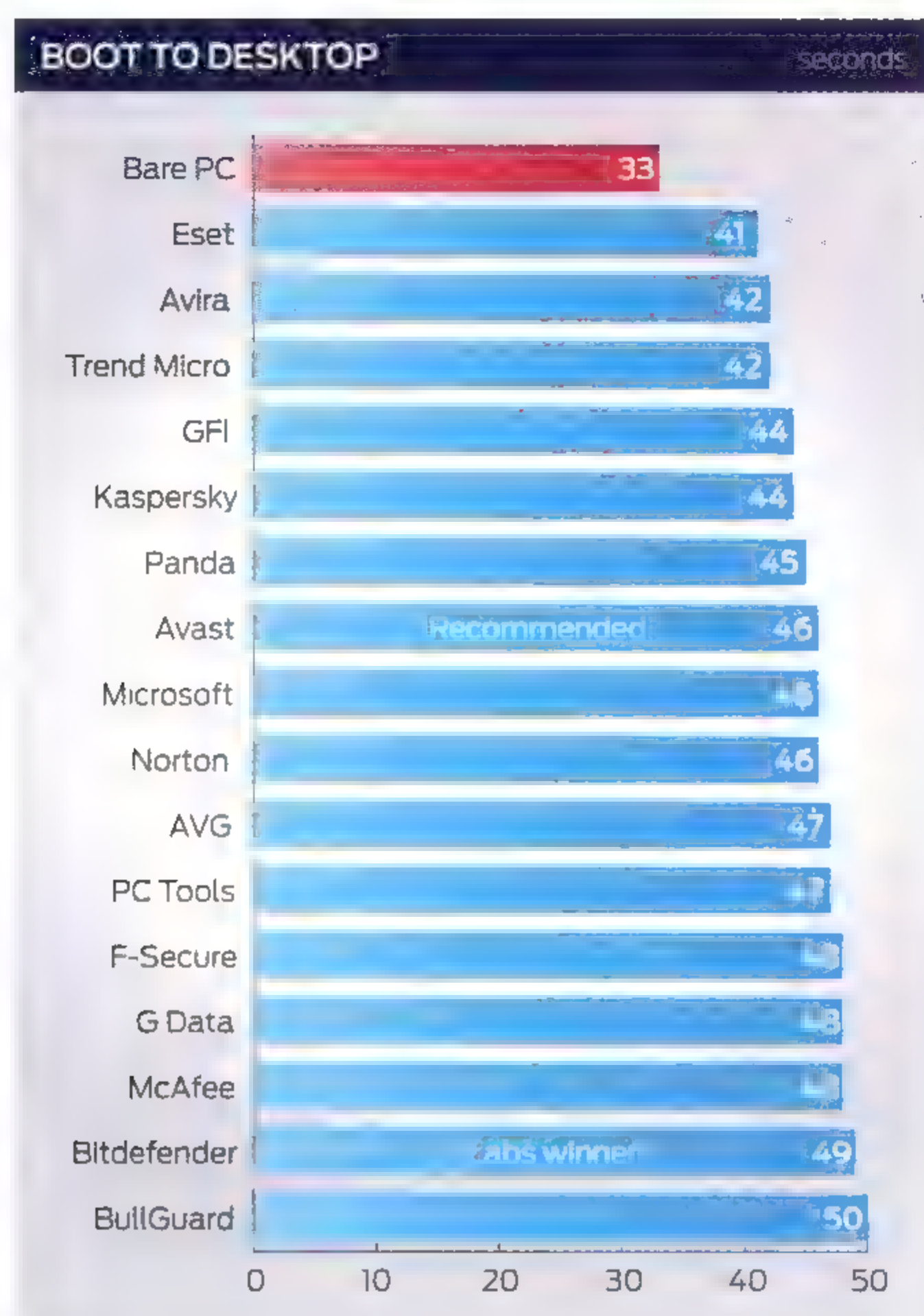
When Microsoft released Security Essentials back in 2009, many commentators (myself included) wondered whether it might spell the end of commercial security software. Clearly, that hasn't come to pass. Paid-for suites have managed to justify their continued existence with additional features such as password managers and vulnerability scans – and, as this month's results show, they've also developed far more effective techniques for detecting previously unseen malware. When you consider the added features in most paid for packages, you might start to wonder whether it's actually the free packages whose days are numbered.

### “Commercial publishers must be feeling squeezed”

Of course, to get any of the packages cheaply you have to shop around. Buy direct from the company's website and you'll be charged more than double the price. Not that this particular publisher deserves to be singled out: almost every security software vendor does the same thing. Presumably people who come actively looking for a particular brand name aren't as price-averse as more casual shoppers.

Publishers' own prices are also typically higher when it comes to renewing subscriptions. If a convenient in-product renewal form pops up, we suggest you ignore it: you'll almost invariably get a better deal if you junk the product and buy a whole new copy of the latest version, again from a third-party retailer.

Such finagling leaves a slightly bad taste in the mouth, as if the security vendors are trying to trick us into paying more than is necessary for their software. But can we blame them? Free packages may not be killing off paid-for ones, but when a three-PC licence for a top-grade suite can be bought internationally for half the 'retail price', commercial publishers must be feeling squeezed.





# PROTECT WHAT YOU VALUE

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hackers with **McAfee**  
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# THE A-LIST

ONLY THE BEST OF THE BEST MAKE  
IT TO PC & TECH AUTHORITY'S A-LIST



**PC**  
& **TECH**  
AUTHORITY  
★ A-LIST ★



## PCS DESKTOPS ▼

### VALUE ACER VERITON L480G

★★★★★

PRICE \$779

SUPPLIER [www.acer.com.au](http://www.acer.com.au)

If you just want an unobtrusive PC for office work and web browsing at home, look no further than this. It might not be the most powerful machine, but at this price it's great value.

**SPECIFICATIONS** Dual-Core processor E3400 (2.6GHz), 1GB DDR3-SDRAM, 320GB SATA Hard Drive 7200 RPM, 16X Dual Layer DVD Burner, 1 year onsite warranty, Windows 7. **WEB ID** N/A



### HIGH-END TI DELUXE 670 W8

★★★★★

PRICE \$1635

SUPPLIER [www.ticomputers.com.au](http://www.ticomputers.com.au)

With an overclocked Core i5 CPU that delivers excellent performance and the excellent GeForce GTX 670, this is a great all-round performer for work and play.

**SPECIFICATIONS** Intel Core i7-3570K (clocked to 4.4GHz); 8GB DDR3 RAM; 120GB SSD; 2TB HDD; GeForce GTX 670; Samsung S24B300H 24in monitor; Windows 7. **WEB ID** N/A



### GAMING ASUS ROG TYTAN CG8565 [HE]

★★★★★

PRICE \$4999

SUPPLIER [www.asus.com.au](http://www.asus.com.au)

The best performing Sandy Bridge gaming system that we've seen to date. Expensive, but well made and future-resistant.

**SPECIFICATIONS** Intel Core i7 2600K; 16GB DDR3 RAM; 80GB SSD; 2TB 7200 RPM HDD; Blu-ray writer; NVIDIA GeForce GTX 590; Bluetooth mechanical keyboard and gaming mouse **WEB ID** 297257



### ALL-IN-ONE APPLE IMAC 27IN

★★★★★

PRICE \$1949

SUPPLIER [www.apple.com/au](http://www.apple.com/au)

If you can afford it, the 27in iMac is the finest piece of all-in-one engineering on the market. A truly powerful beast with performance to match its looks.

**SPECIFICATIONS** 2.7GHz Core i5-2500s; 4GB DDR3 RAM; 1TB Western Digital Caviar Black HDD; DVD writer; AMD Radeon HD 6770M graphics; 27in 2560 x 1440 LCD. **WEB ID** N/A



## PCS LAPTOPS ▼

### VALUE DELL VOSTRO 3550

★★★★★

PRICE \$699 SUPPLIER [www.dell.com.au](http://www.dell.com.au)

This Core i5-powered laptop comes in under \$700 but doesn't sacrifice performance or quality to do so. A fantastic all-round budget offering for business or home.

**SPECIFICATIONS** Intel Core i5-2450M; 4GB DDR3; AMD Radeon HD6630M; 500GB HDD; 15.6in 1366x768 LCD; Wi-Fi; Ethernet; HDMI. **WEB ID** N/A

ALTERNATIVE HP PROBOOK 4310S **WEB ID** N/A

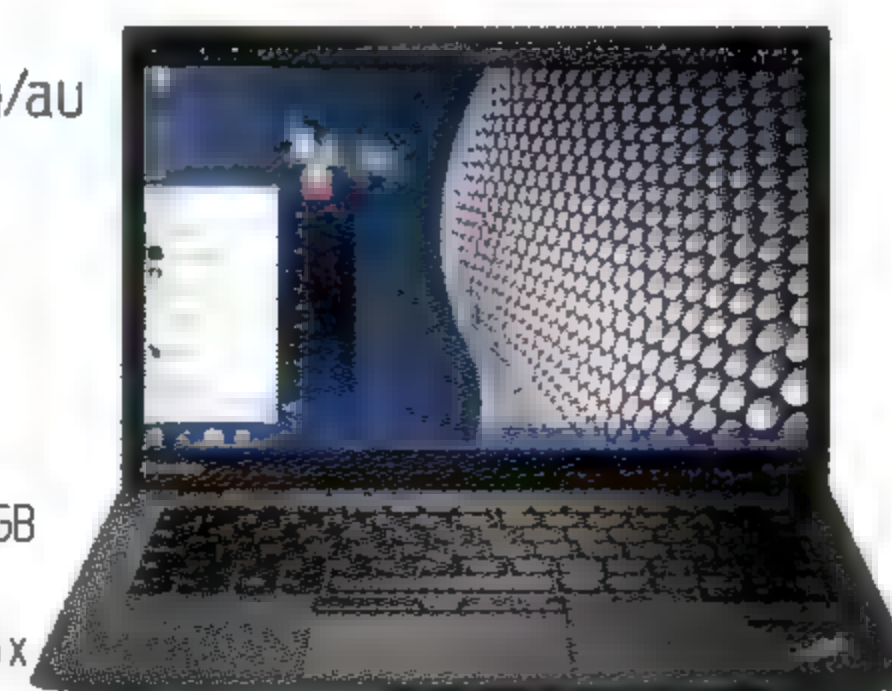
### HIGH-END LENOVO THINKPAD X1 CARBON

★★★★★

PRICE \$2127 SUPPLIER [www.lenovo.com/au](http://www.lenovo.com/au)

We've been waiting a long time for a truly modern ThinkPad, and the X1 Carbon does not disappoint. It is powerful, very well-engineered, and looks the part.

**SPECIFICATIONS** 1.8GHz Intel Core i5-3427U • 8GB RAM • 128GB SSD • 14in 1600 x 900 TFT • 1 x USB 3 • 1 x USB 2 • dual-band 802.11a/g/n • Bluetooth 4 • 3G • 3yr RTB warranty • 331 x 226 x 19mm (WDH) • 1.36kg. **WEB ID** N/A

ALTERNATIVE SONY VAIO S **WEB ID** N/A

### GAMING RAZER BLADE

★★★★★

PRICE \$2999 SUPPLIER [au.razerzone.com](http://au.razerzone.com)

Sleek, sexy and laden with raw power, Razer's Blade laptop shows that gaming laptops need not be big clunky beasts, and packs a whole pile of innovative features.

**SPECIFICATIONS** 2.2GHz Core i7-3632QM; 2GB Nvidia GTX 660M; 8GB DDR3; 1920 x 1080 17.3in screen; 500GB HDD + 64GB SSD; 802.11a/g/n; USB 3; 427 x 277 x 224mm (WDH) **WEB ID** N/A

ALTERNATIVE ALIENWARE M17X R4 **WEB ID** N/A

### ULTRA PORTABLE ASUS ZENBOOK UX31

★★★★★

PRICE \$1800 SUPPLIER [www.asus.com.au](http://www.asus.com.au)

A beautiful and fast laptop means ASUS' Zenbook nosed in front of the contenders, and came out as winner of our most recent Ultrabook group test.

**SPECIFICATIONS** 1.80GHz Intel Core i7-2677M; 4GB DDR3; 128GB SSD; 802.11n; Bluetooth 4; 13in 1600 x 900 screen **WEB ID** 293408

ALTERNATIVE DELL XPS 13 **WEB ID** 293415

## ALSO RECOMMENDED...

### ► NEXUS 7 ★★★★★★

When Google and Asus teamed up to develop a cheap 7in Android tablet we were excited at the possibility. The resulting Nexus 7 is a wonderful product, making it the best 7in tablet to date. Add to this the very reasonable price of \$299 for the 16GB version and it is one of the most tempting products out there at the moment.

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## PERIPHERALS MONITORS ▼

### VALUE BENQ G2222HDL

★★★★★

PRICE \$218 SUPPLIER [www.benq.com.au](http://www.benq.com.au)

With a Full HD panel and image quality good enough to match rivals, we can forgive the black level and lack of features: it's a bargain.

**SPECIFICATIONS** 21.5in LCD; 1920 x 1080 resolution; 5ms response time; 250cd/m2 brightness; 1000:1 contrast ratio (10,000 dynamic); 505 x 175 x 393mm (WDH); 5kg. **WEB ID** N/A

ALTERNATIVE BENQ E2200HD **WEB ID** N/A

### HIGH-END DELL ULTRASHARP U2312HM

★★★★★

PRICE \$269 SUPPLIER [www.dell.com.au](http://www.dell.com.au)

Dell has managed to pack a tonne of features into this reasonably priced E-IPS based screen. Great features and quality for the price.

**SPECIFICATIONS** 23in E-IPS panel; 1920 x 1280 resolution; 8ms response time; 300cd/m2 brightness; 1000:1 contrast ratio; D-SUB/DVI; DisplayPort; USB 2.0 Hub **WEB ID** N/A

ALTERNATIVE SAMSUNG SYNCMASTER 2243BW **WEB ID** N/A

### PROFESSIONAL DELL ULTRASHARP U2412M

★★★★★

PRICE \$399 SUPPLIER [www.dell.com.au](http://www.dell.com.au)

Incredible image quality from this IPS monitor, with the added benefit of a 1920x1200 (16:10) resolution.

**SPECIFICATIONS** 24in LCD; 1920 x 1200 resolution; 6ms; 400cd/m2; 80,000:1 dynamic; HDMI; DisplayPort; DVI-D with HDCP; VGA; 493 x 559.7 x 201.5 mm (WDH) 8.5kg. **WEB ID** N/A

ALTERNATIVE HP ZR30W **WEB ID** N/A

### GAMING LG W2363D-PF

★★★★★

PRICE \$327 SUPPLIER [www.lg.com.au](http://www.lg.com.au)

A Full HD 3D monitor created specifically for gaming, with a 120Hz refresh, 16:9 aspect ratio; and a 3ms response time.

**SPECIFICATIONS** 23in LCD; 1920x1080 resolution; 3ms response; 400 cd/m2; 70000:1 DFC; 16:9 aspect ratio; HDMI; 555.5x205.95x419.2mm 5.2kg. **WEB ID** N/A

ALTERNATIVE BENQ XL2410T **WEB ID** N/A

**“The brightness on the Super AMOLED screen is remarkable and at 1280 x 800 the resolution impresses”**

## PERIPHERALS PRINTERS ▼

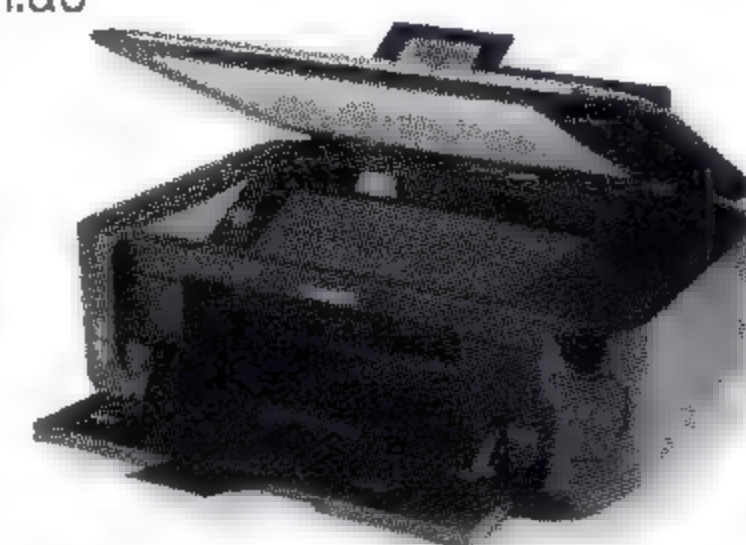
### ALL-IN-ONE CANON PIXMA MG5350

★★★★★

PRICE \$168 SUPPLIER [www.canon.com.au](http://www.canon.com.au)

For most users, this is all the printer you will ever need – a true all-round champion and worthy of its A-List status

**SPECIFICATIONS** 9600 x 2400dpi print; 4800 x 4800ppi scan; USB; 802.11n WLAN; 150-sheet rear tray and front cassette; duplex unit; 450 x 366 x 166mm **WEB ID** N/A

ALTERNATIVE CANON PIXMA MX860 **WEB ID** N/A

### INKJET CANON PIXMA IP4950

★★★★★

PRICE \$109 SUPPLIER [www.canon.com.au](http://www.canon.com.au)

Another excellent inkjet from the Pixma range. The IP4950 further refines the features of its remarkable pedigree.

**SPECIFICATIONS** Five-colour A4 inkjet; 9600 x 2400dpi resolution; USB 2; PictBridge; 2 x 150-sheet input trays; **WEB ID** N/A

ALTERNATIVE LEXMARK IMPACT S305 **WEB ID** N/A

### LASER FUJI-XEROX DOCUPRINT CP205

★★★★★

PRICE \$172 SUPPLIER [www.fujixerox.com.au](http://www.fujixerox.com.au)

This SLED-based printer delivers fantastic quality prints, comes with network support and is an all-round great performer.

**SPECIFICATIONS** 1200 x 2400 dpi; SLED Colour printer; 384MHz processor; 128MB memory; 10/100 Ethernet; USB 2.0; 150 sheet input tray. **WEB ID** N/A

ALTERNATIVE KYOCERA FS-1350DN **WEB ID** 117844

## ALSO RECOMMENDED

### ASUS TRANSFORMER PAD INFINITY ★★★★★

Asus' Transformer lineup has been one of the big Android success stories in recent years, and somewhat prescient considering the sheer number of transformable Windows 8 tablets that are on the way. The Infinity is the premium version of the Android lineup, packing a Tegra 3 processor and a gorgeous 1920 x 1200 IPS screen. It isn't cheap at \$999, but if you are after a premium Android tablet this is the go-to product.

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**PC  
TECH**  
AUTHORITY  
RECOMMENDED



## PERIPHERALS STORAGE ▼

### DESKTOP SEAGATE FREEAGENT GOFLEX DESK

★★★★★★

PRICE \$219 SUPPLIER [www.seagate.com](http://www.seagate.com)

This 2TB external drive still offers good value despite the floods. The optional USB 3.0 adaptor makes for excellent transfer speeds and the design is tasteful and compact.

**SPECIFICATIONS** 2TB external hard disk with NTFS; USB 3.0, with other docks available as optional; 44 x 124 x 158mm 894g. **WEB ID** N/A

**ALTERNATIVE** MAXTOR ONETOUCH MINI 320GB **WEB ID** 109661



### PORTABLE IOMEGA EGO PORTABLE

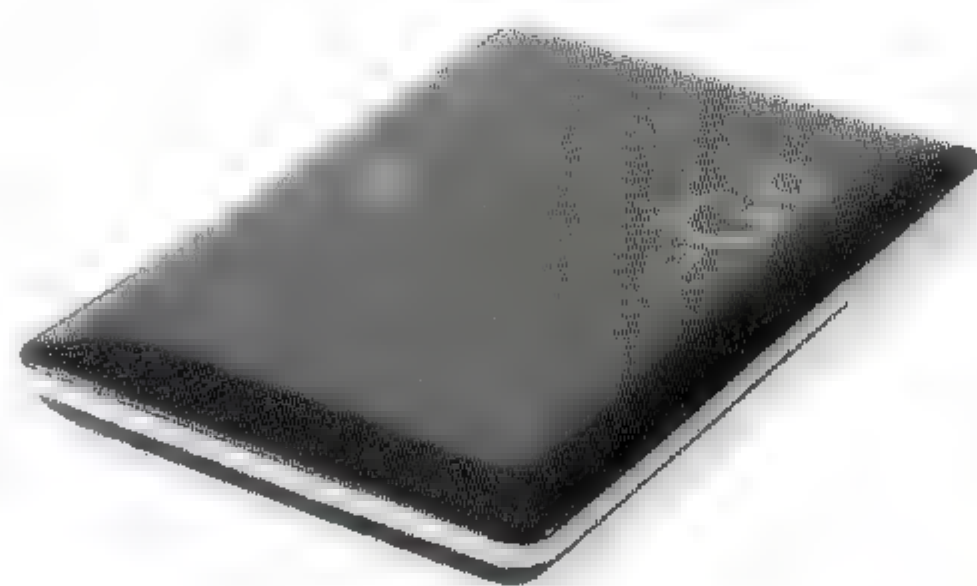
★★★★★★

PRICE \$119 SUPPLIER [www.iomega.com](http://www.iomega.com)

An extremely zippy USB 3 drive that comes in reasonably cheap for its 500GB of storage. Elegantly designed, with a light and slimline form factor.

**SPECIFICATIONS** 500GB portable drive with NTFS; USB 3; 3 year warranty; 84 x 124 x 18mm, 230g. **WEB ID** N/A

**ALTERNATIVE** LACIE RUGGED 500GB **WEB ID** 232960



### USB VERBATIM STORE 'N GO USB 3

★★★★★★

PRICE \$55 SUPPLIER [www.verbatim.com.au](http://www.verbatim.com.au)

At 32GB this is more than enough for even a heavy user. USB 3 as a thumb drive is slowly becoming more common and this is a winner

**SPECIFICATIONS** 32GB; read speeds up to 120MB/s and write up to 70MB/s; USB 3.0. **WEB ID** N/A

**ALTERNATIVE** KINGSTON DATA TRAVELLER 64GB **WEB ID** N/A



### NAS BUFFALO CLOUDSTATION 2TB

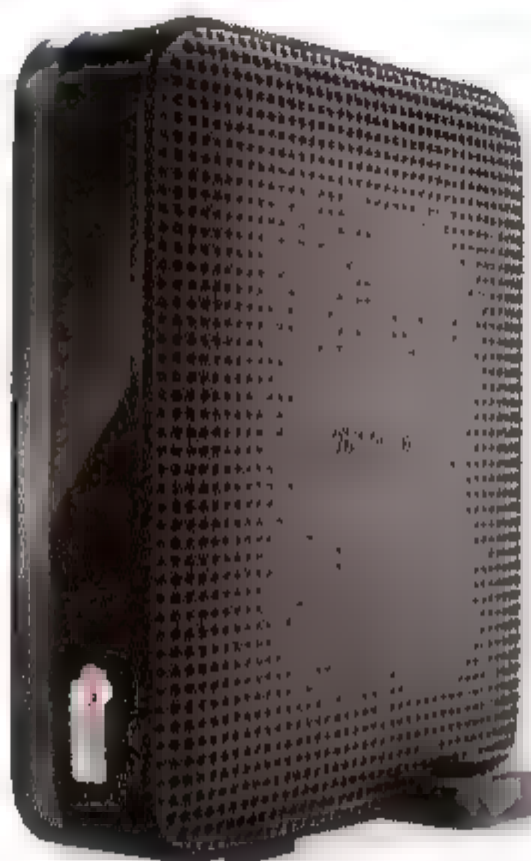
★★★★★★

PRICE \$298 SUPPLIER [www.buffalotech.com](http://www.buffalotech.com)

Remarkably easy to set up, the Cloudstation features a highly functional smartphone app letting you access all your stored data remotely – a great product for the price.

**SPECIFICATIONS** Gigabit Ethernet; Android and iOS apps; 45 x 150 x 175mm; persistent Internet connection required. **WEB ID** 295491

**ALTERNATIVE** SYNOLOGY DS411 **WEB ID** 282660



## HANDHELDS ▼

### BUDGET SMARTPHONE HTC WILDFIRE

★★★★★★

PRICE \$349 outright SUPPLIER [www.htc.com](http://www.htc.com)

Another low-cost device from HTC that looks and feels like something a lot more expensive. It sports a 5MP camera, flash, Android 2.1, multitouch and HTC's Sense UI. Big phone features, small price.

**SPECIFICATIONS** 528MHz processor; 512MB ROM, 384MB RAM; 3.2in 240 x 320 LCD; GSM/GPRS/EDGE/3G/HSDPA; 5MP camera; 1yr RTB warranty; 60 x 12 x 107mm (WDH); 118g. **WEB ID** 224136

**ALTERNATIVE** HTC ARIA **WEB ID** N/A



### HIGH-END PHONE HTC ONE X

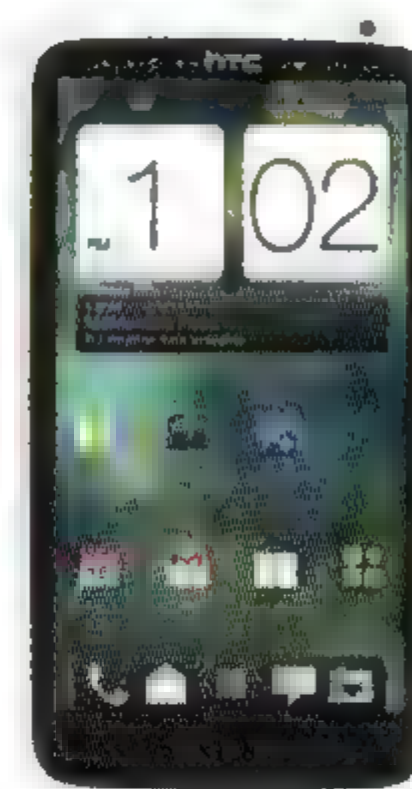
★★★★★★

PRICE Varies SUPPLIER [www.htc.com](http://www.htc.com)

A truly remarkable phone that restores a great deal of our confidence in the company thanks to great performance and design.

**SPECIFICATIONS** 1.5GHz Tegra 3 CPU; 32GB internal memory; 4.7in 1280 x 720 sLCD screen; 8MP camera; 134.36 x 69.9 x 8.9 mm 130g **WEB ID** 296575

**ALTERNATIVE** APPLE IPHONE 4S



### TABLET PC APPLE IPAD

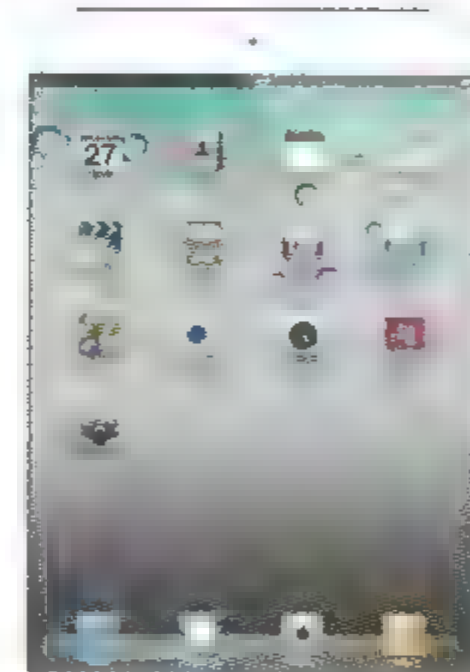
★★★★★★

PRICE \$539 SUPPLIER [store.apple.com/au](http://store.apple.com/au)

Despite the "4G" debacle, the new iPad remains the one to beat, with the new retina screen a real game changer

**SPECIFICATIONS** 9.7in 1536x2560 widescreen Multi-Touch display; 1GHz A5X processor, 16, 32 or 64 GB available; 3G and/or Wi-Fi connectivity; max 652g weight. **WEB ID** N/A

**ALTERNATIVE** NEXUS 7



### EBOOK READER KINDLE

★★★★★★

PRICE \$109

SUPPLIER [www.amazon.com](http://www.amazon.com)

The new model is quicker, slimmer, lighter and cheaper than before. If all you want to do is read books, its simple design and performance are perfect.

**SPECIFICATIONS** 6in e-ink screen, 170g weight, 114 x 87 x 166 mm, 2GB memory, 10-day battery life. **WEB ID** 279534

**ALTERNATIVE** SONY READER WI-FI **WEB ID** 279534

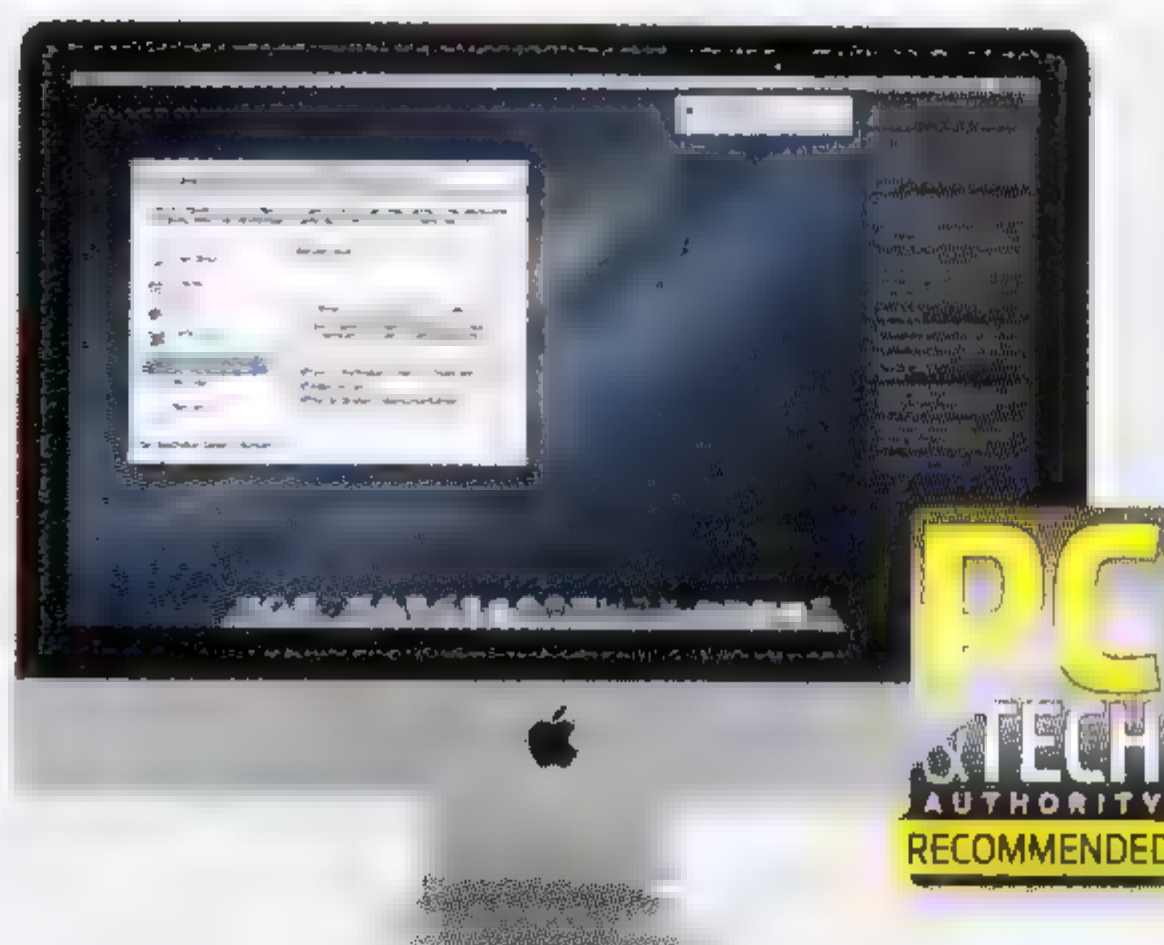


## ALSO RECOMMENDED...

### ► APPLE OS X 10.8 MOUNTAIN LION ★★★★★★

The latest iteration of Apple's operating system brings more and more mobile style features into play, with iOS style notifications and deeper social network integration. It is a bold advance of the operating system, and comes with a very reasonable \$21 pricetag for those wanting to update their Macs to the latest and greatest.

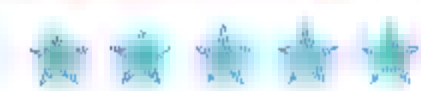
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# NETWORKING ▼

## WIRELESS ROUTER ASUS RT-N56U



**PRICE** \$185 **SUPPLIER** [www.asus.com.au](http://www.asus.com.au)

A high-speed router that looks good and is easy to use. All that, coupled with a reasonable price, makes this a tempting buy for anyone.

**SPECIFICATIONS** 802.11n wireless router; 4 x Gigabit Ethernet ports; 2 x USB; PPOE; PPTP; LZTP; 145x63x174mm. **WEB ID** 292911

**ALTERNATIVE** EDIMAX BR-647ND **WEB ID** 292738



## MEDIA STREAMER WD TV LIVE HUB



**PRICE** \$333 **SUPPLIER** [www.wdc.com](http://www.wdc.com)

WD Live products are long-time inhabitants of the A-List. The Hub combines both DLNA playback and serving, to act as a one-stop shop for home media networks

**SPECIFICATIONS** 2xUSB; Gigabit Ethernet; HDMI; Component; Composite; Optical S/PDIF out; DLNA server; 1TB HDD **WEB ID** 245868

**ALTERNATIVE** MICROSOFT XBOX 360 **WEB ID** 105757



## ADSL MODEM ROUTER NETGEAR DGND3700



**PRICE** \$170 **SUPPLIER** [www.netgear.com.au](http://www.netgear.com.au)

This router is respectably priced, and if you want optimum wireless performance and the best range across both 2.4GHz and 5GHz frequency bands it's a great choice.

**SPECIFICATIONS** 802.11n wireless router; 4 x Gigabit Ethernet ports; 2x USB ports; Passthrough VPN; 160 x 76 x 233mm. **WEB ID** 289486

**ALTERNATIVE** AVM FRITZ!BOX FON WLAN 7390 **WEB ID** 292917



## WIRELESS ADAPTER NETGEAR WNDA4100



**PRICE** \$59 **SUPPLIER** [www.netgear.com.au](http://www.netgear.com.au)

While adapters may seem like a thing of the past, Netgear pulls out all the stops with an impressive dual band device that includes one-touch WPS.

**SPECIFICATIONS** 802.11n abgn 2.4/5GHz; WPS capability; Dimensions: 86.8 x 27.6 x 13.4 mm; Weight: 19.5g **WEB ID** N/A

**ALTERNATIVE** EDIMAX EW-7811UN **WEB ID** N/A



## POWERLINE ADAPTER TP-LINK AV200



**PRICE** \$98 **SUPPLIER** [www.tplink.com.au](http://www.tplink.com.au)

With a simple setup and solid streaming speed, the AV200 is an excellent choice for anyone looking for a low-cost alternative to wireless.

**SPECIFICATIONS** Homeplug AV, IEEE802.3 and IEEE802.3u standard; 10/100Mbps ethernet port; 300m range; 93x56x30 mm. **WEB ID** N/A

**ALTERNATIVE** D-LINK POWERLIVE AV500 **WEB ID** N/A



# SOFTWARE ▼

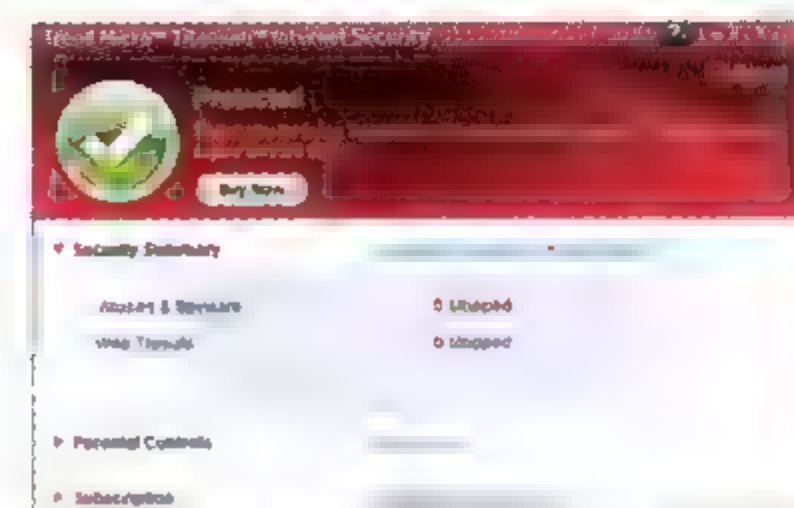
## SECURITY TREND MICRO TITANIUM 2012



**PRICE** \$99.95 per year

**SUPPLIER** [www.trendmicro.com.au](http://www.trendmicro.com.au)

Excellent malware protection with an easy-to-use interface at a very appealing price.



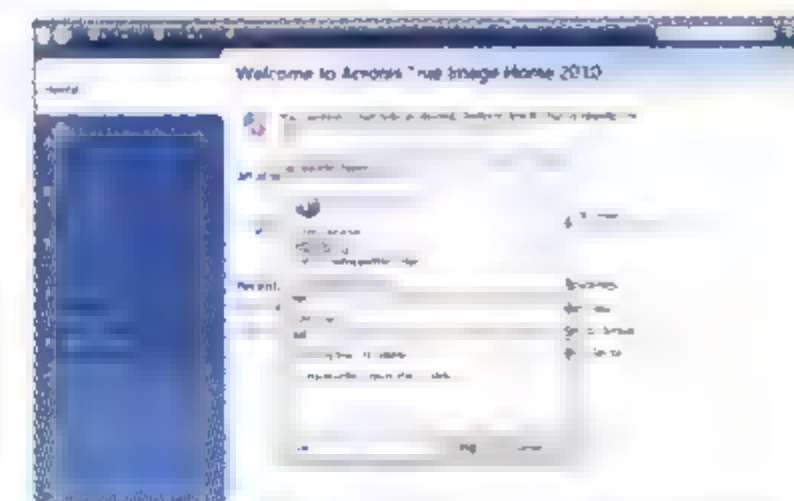
## BACK UP ACRONIS TRUE IMAGE 2011



**PRICE** \$70 (upgrade \$40)

**SUPPLIER** [www.acronis.com.au](http://www.acronis.com.au)

A clear and well-organised front end makes this easier to use than ever. Not much else has changed.



## OFFICE SUITE MICROSOFT OFFICE 2013



**PRICE** \$ depends on version

**SUPPLIER** [www.microsoft.com.au](http://www.microsoft.com.au)

Amidst new touch features, there are some fantastic new additions to the latest office.



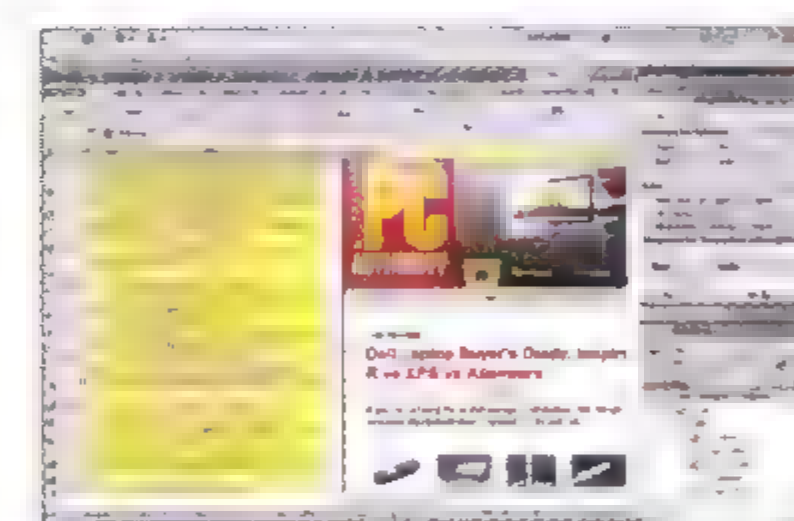
## WEB DEV ADOBE DREAMWEAVER CS5



**PRICE** \$667 (Full) \$200 (Upgrade)

**SUPPLIER** [www.adobe.com.au](http://www.adobe.com.au)

This edition makes PHP and CMS its core focus, which gives it the new lease of life it so desperately needed.



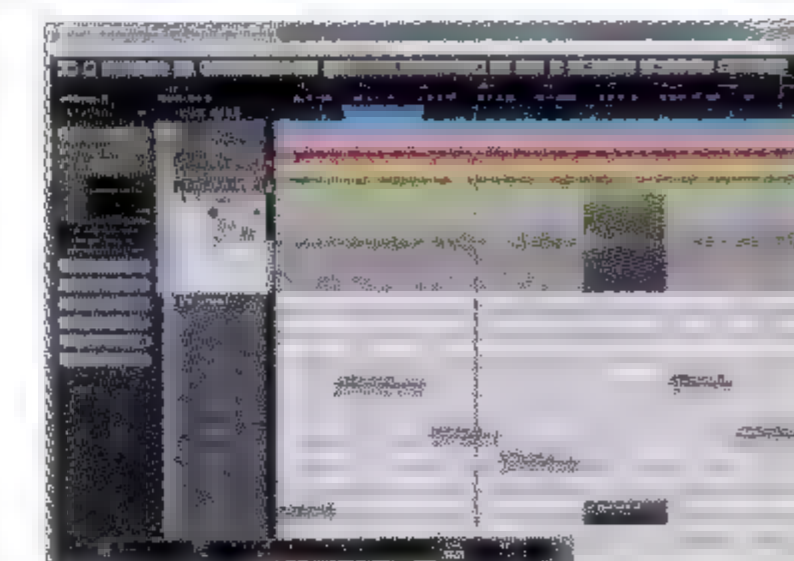
## AUDIO CUBASE 6



**PRICE** \$499

**SUPPLIER** [www.steinberg.net](http://www.steinberg.net)

The addition of better tools for live recording pushes this program to new heights and gives it a well-deserved place on the A-List.



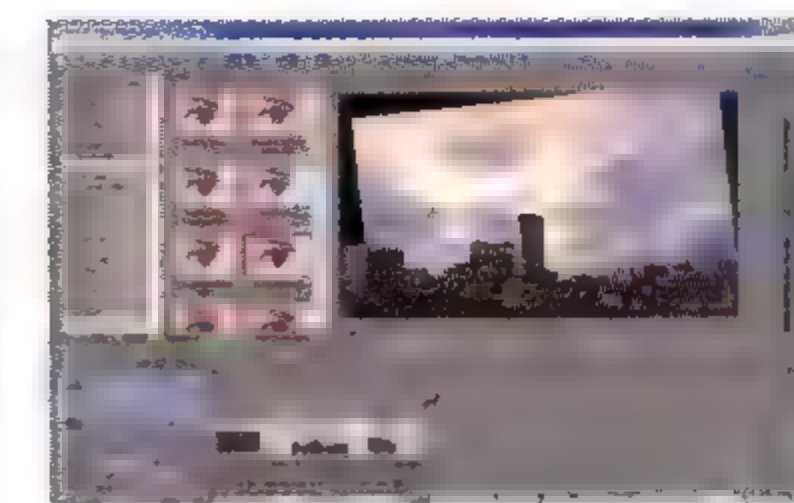
## VIDEO SONY VEGAS MOVIE STUDIO HD PLATINUM 10



**PRICE** \$81

**SUPPLIER** [www.sony.com.au](http://www.sony.com.au)

May not have the bells and whistles of other consumer editing packages, but its tools are efficient.



## PHOTO ADOBE PHOTOSHOP LIGHTROOM 4



**PRICE** \$87 (Full)

**SUPPLIER** [www.adobe.com.au](http://www.adobe.com.au)

An excellent tool for photo management and light editing, at a very reasonable price.





## COMPONENTS HIGH END PC ▼

### CPU INTEL CORE I7-3770K

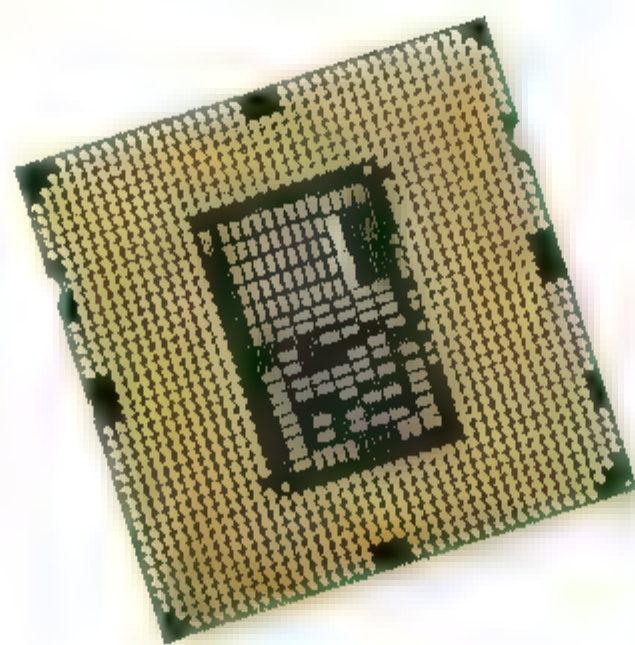
★★★★★

PRICE TBC SUPPLIER [www.intel.com.au](http://www.intel.com.au)

This flagship of the Ivy Bridge range gives great performance and is unlocked and ready for overclocking.

**SPECIFICATIONS** 3.5GHz Socket 1155; quad-core CPU; 8MB L3 cache; 77W TDP; 22nm process. **WEB ID** N/A

ALTERNATIVE INTEL CORE I5-2500 **WEB ID** N/A



### MOTHERBOARD GIGABYTE GA-Z77X-UD5H

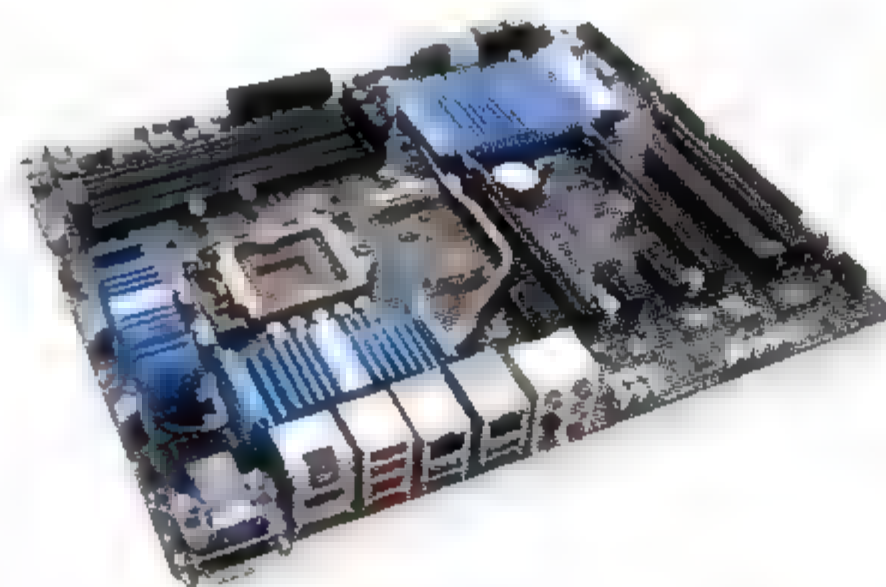
★★★★★

PRICE \$289 SUPPLIER [www.gigabyte.com.au](http://www.gigabyte.com.au)

This flagship Z77 motherboard is overflowing with features like USB 3 and SATA 6Gbps ports..

**SPECIFICATIONS** LGA 1155 motherboard; Intel Z77 chipset; USB 3; SATA 3; supports 3 way CrossfireX and SLI. **WEB ID** N/A

ALTERNATIVE ASUS P8Z77-I DELUXE **WEB ID** 217860



### GRAPHICS CARDS NVIDIA GEFORCE GTX 670

★★★★★

PRICE \$500 SUPPLIER [www.nvidia.com](http://www.nvidia.com)

With performance close to the much more expensive GTX 680, this is the high end card of choice for gamers..

**SPECIFICATIONS** 1344 CUDA cores; 915MHz Core; 3.5 billion transistors; 2GB GDDR5; 256-bit memory bus; 28nm manufacturing process. **WEB ID** N/A

ALTERNATIVE ATI RADEON HD7950 **WEB ID** N/A



### STORAGE OCZ REVODRIVE 240GB

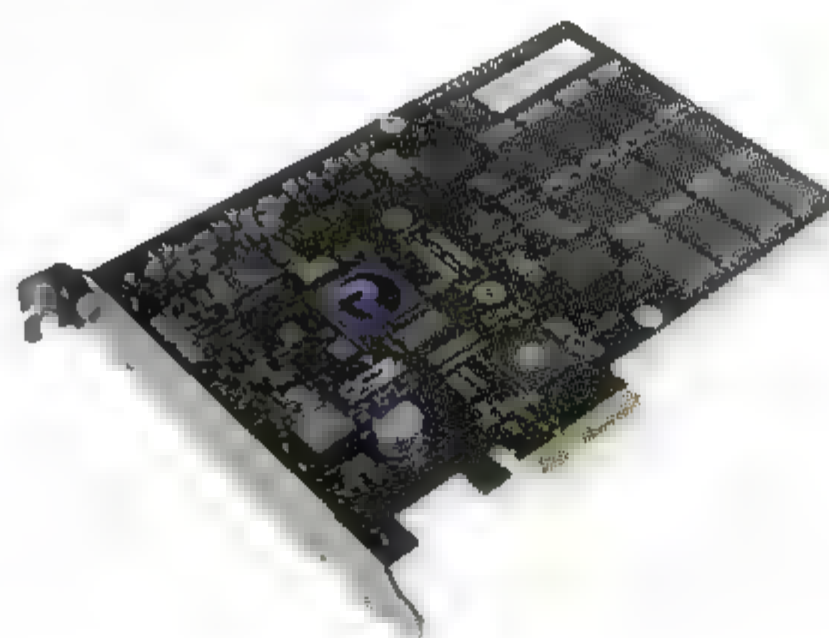
★★★★★

PRICE \$539 SUPPLIER [www.ocz.com](http://www.ocz.com)

This PCI-Express based SSD is simply the fastest bootable drive around, with read speeds of up to 500MB/sec.

**SPECIFICATIONS** 120GB MLC Flash; 2 x Sandforce 60GB SSDs; Silicon Image RAID controller, PCI-E x4 Interface. **WEB ID** N/A

ALTERNATIVE OCZ VERTEX 3 240GB **WEB ID** N/A



### CASE CORSAIR GRAPHITE 600T

★★★★★

PRICE \$200 SUPPLIER [www.corsair.com](http://www.corsair.com)

Not only a great case for building, the 600T in white is one of the best looking models on the market

**SPECIFICATIONS** ATX/mATX form factor; Black or white; white lighting; two fans; supports watercooling kits. **WEB ID** N/A

ALTERNATIVE COOLERMASTER COSMOS II **WEB ID** N/A



### PSU CORSAIR AX-750 GOLD

★★★★★

PRICE \$240 SUPPLIER [www.corsair.com](http://www.corsair.com)

80 Plus Gold means that this PSU is capable of great efficiency, while 750W should be enough for most users.

**SPECIFICATIONS** 80 Plus Gold certified; Modular design; 4 x PCI-E power; 12 x SATA power; 8x Molex plugs. **WEB ID** N/A

ALTERNATIVE ANTEC 850W HIGH CURRENT PRO **WEB ID** N/A



## COMPONENTS BUDGET PC ▼

### CPU AMD A8-3850

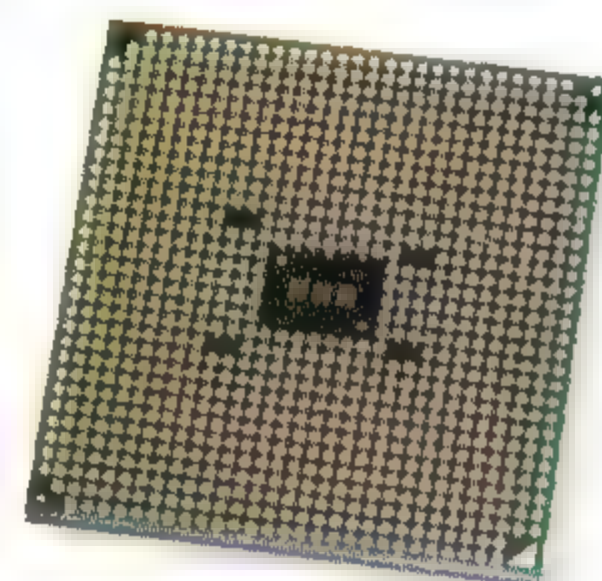
★★★★★

PRICE \$150 SUPPLIER [www.amd.com.au](http://www.amd.com.au)

This quad core APU packs fantastic integrated graphics and CPU performance.

**SPECIFICATIONS** 2.9GHz Socket FM1; Quad core CPU; 400 Radeon cores; 100W TDP. **WEB ID** N/A

ALTERNATIVE CORE I5-650 **WEB ID** N/A



### MOTHERBOARD GIGABYTE A75M-UD2H

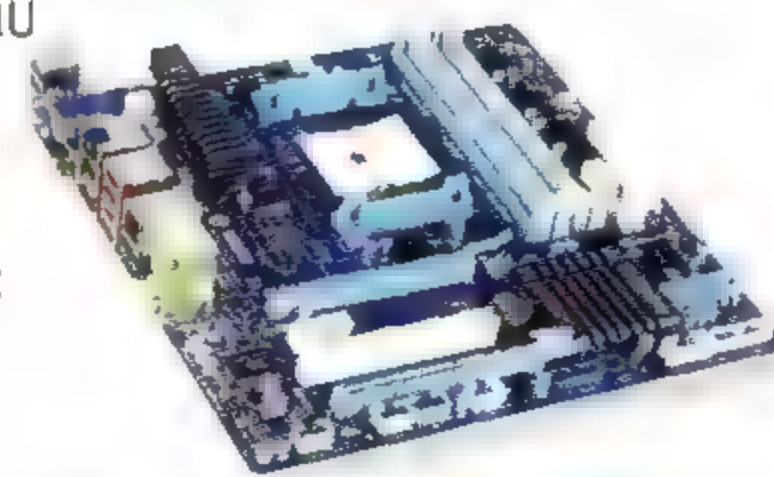
★★★★★

PRICE \$110 SUPPLIER [www.gigabyte.com.au](http://www.gigabyte.com.au)

For an Intel Core-based system, this is a fully featured budget-priced board.

**SPECIFICATIONS** Socket 1156; Intel H55 chipset; 2 x PCI-E 16x; 4 x PCI-E 2x; 4 x DDR3 sockets; 5 x SATA; 8 x USB. **WEB ID** N/A

ALTERNATIVE ASUS P5Q **WEB ID** N/A



### GRAPHICS CARDS AMD RADEON 6850

★★★★★

PRICE \$160 SUPPLIER [www.amd.com](http://www.amd.com)

Hits a price/performance sweet spot, giving great gaming for a pretty reasonable price.

**SPECIFICATIONS** PCI Express 2.0 graphics card; 775MHz core clock; 1GB GDDR5 at 1,000MHz; 960 stream processors. **WEB ID** N/A

ALTERNATIVE RADEON 6570 **WEB ID** N/A



### STORAGE HITACHI DESKSTAR 7K1000.D 1TB

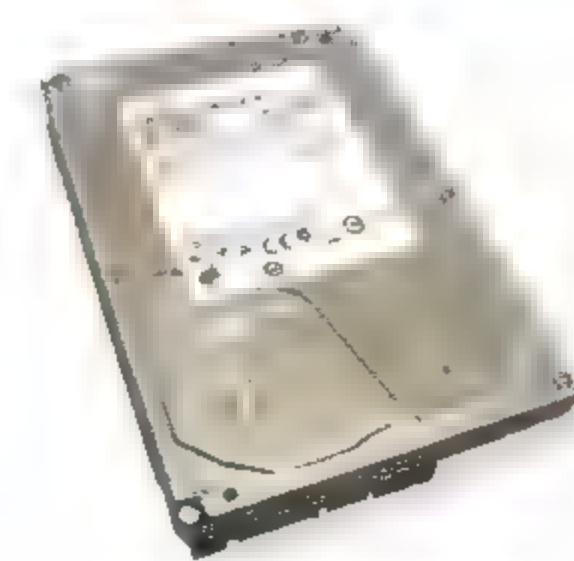
★★★★★

PRICE \$120 SUPPLIER [hitachigst.com](http://hitachigst.com)

The winner of our hard drive group test combines price and performance nicely..

**SPECIFICATIONS** SATA 6Gbps hard disk; 1TB capacity; 32MB data buffer; 4k sector support. **WEB ID** N/A

ALTERNATIVE WD GREEN 1TB **WEB ID** N/A



### CASE BITFENIX RAIDER

★★★★★

PRICE \$100 SUPPLIER [www.bitfenix.com](http://www.bitfenix.com)

An excellent case with amazing looks and features for the price.

**SPECIFICATIONS** ATX case; 210 x 500 x 493mm (WxDxH); 7x expansion slots; 6x 3.5in drive bays. **WEB ID** N/A

ALTERNATIVE ANTEC ONE **WEB ID** N/A



### PSU ANTEC NEO ECO 520C

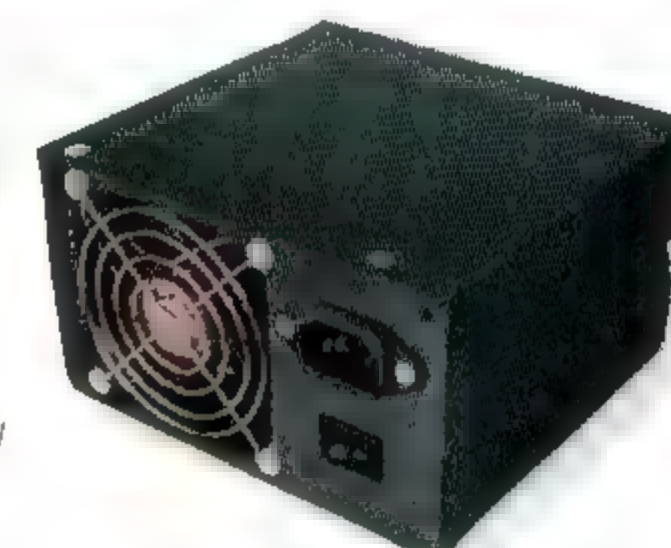
★★★★★

PRICE \$70 SUPPLIER [www.antec.com](http://www.antec.com)

500W of power from Antec will be more than enough juice for a budget system.

**SPECIFICATIONS** 500W PSU; 80 Plus Bronze; captive cabling; low noise and power consumption. **WEB ID** N/A

ALTERNATIVE OCZ MODXSTREAM PRO 600W **WEB ID** N/A





# CES 2013 FOR GAMERS

The greatest gadget show on earth had more than a few great moments for gamers this year. From impressive handhelds to Steam's efforts to take PC gaming into the loungeroom, it's great to see gaming – and PC gaming at that! – at the leading edge of technology. Here's three of the top contenders for Gear We Really, Really Want to See in the Lab Sometime Soon.

## THE STEAM BOX

Valve's been threatening to get into the hardware space for a while now, and at CES its plans have been discovered to be much firmer, albeit in a slightly different form. Valve isn't so much making the devices as partnering with specialist PC builders to produce machines to the Steam Box specification.

The first of these is codenamed the Piston and developed by Xi3, under financial partnership with Valve.

The Piston features 1TB of storage, an upgradable CPU, and a range of IO options, from eSATA to USB3, alongside ethernet, audio, and two mini display ports. The real killer, though, is the size – the Piston can fit in the palm of a relatively meaty hand.

Other than that, specs are scarce, as is pricing.

Initial pics secured by Polygon show a device that has no Steam or Valve branding, which leads us to think that this isn't so much 'the' Steam box, but rather one idea of a Steam box. In other words, it's a concept that any PC maker – either at home or OEM – could aspire to. About the only point of contention so far is the lack of an optical drive. Valve's Gabe Newell insists this is purely cut down on excess size and heat, but it's easy to see who really benefits from a PC that must rely on pure digital distribution methods – Valve.

Despite this drawback, the Steam Box was chosen by our readers as the most exciting of these three devices. So, here's hoping for a whole slew of Steam Boxes invading loungerooms, and keeping the console market honest, later in the year.



Photo courtesy of TheV



# RAZER EDGE

**R**azer has this awkward habit of announcing products that look kind of naff on paper, but then, in actuality, get us kind of vaguely excited. That pretty much sums up our ongoing, and up to the minute, reactions to Razer Edge gaming tablet, fully unveiled at CES.

The tablet was first shown off last CES, and we were pretty amazingly underwhelmed initially. Though Razer was claiming to be single-handedly keeping PC gaming alive, the tablet/handheld form factor of what was then codenamed Project Fiona seemed to be missing the point. Now, with even NVIDIA getting in on the PC-powered handheld action, Fiona – now the Edge and Edge Pro – seems strangely prescient.

The base Edge tablet will feature a Core i5 processor, NVIDIA GT640M LE GPU, 4GB of RAM and a 64GB SSD. The



Razer Edge Pro, the higher end model, packs a Core i7, NVIDIA GT640M LE GPU, 8GB of RAM, and a 128GB or 256GB SSD.

Both the Edge and Edge Pro will be available in the first quarter of this year, and pricing will start at \$999.

Our initial thoughts about Project Fiona were based on the still-awkward handheld controller design, sporting two Wii-nunchuck-like controllers on either edge of the screen, with form factors determined by a range of optional add-ons.

The Gamepad Controller mode is what Fiona was first revealed as, and is actually just a dock that the tablet fits into. There's also a Keyboard Dock (coming later in the year) for traditional PC-style gaming, and a Docking Station that acts as a charger and offers more IO options, such as television and multiple controller connectivity.

In effect, it's a Steam Box you can take with you, and is really showing off the enduring resilience and versatility of the PC as a true gaming platform – even if it isn't in a traditional, or upgradable, form factor. But speaking of Steam Boxes...

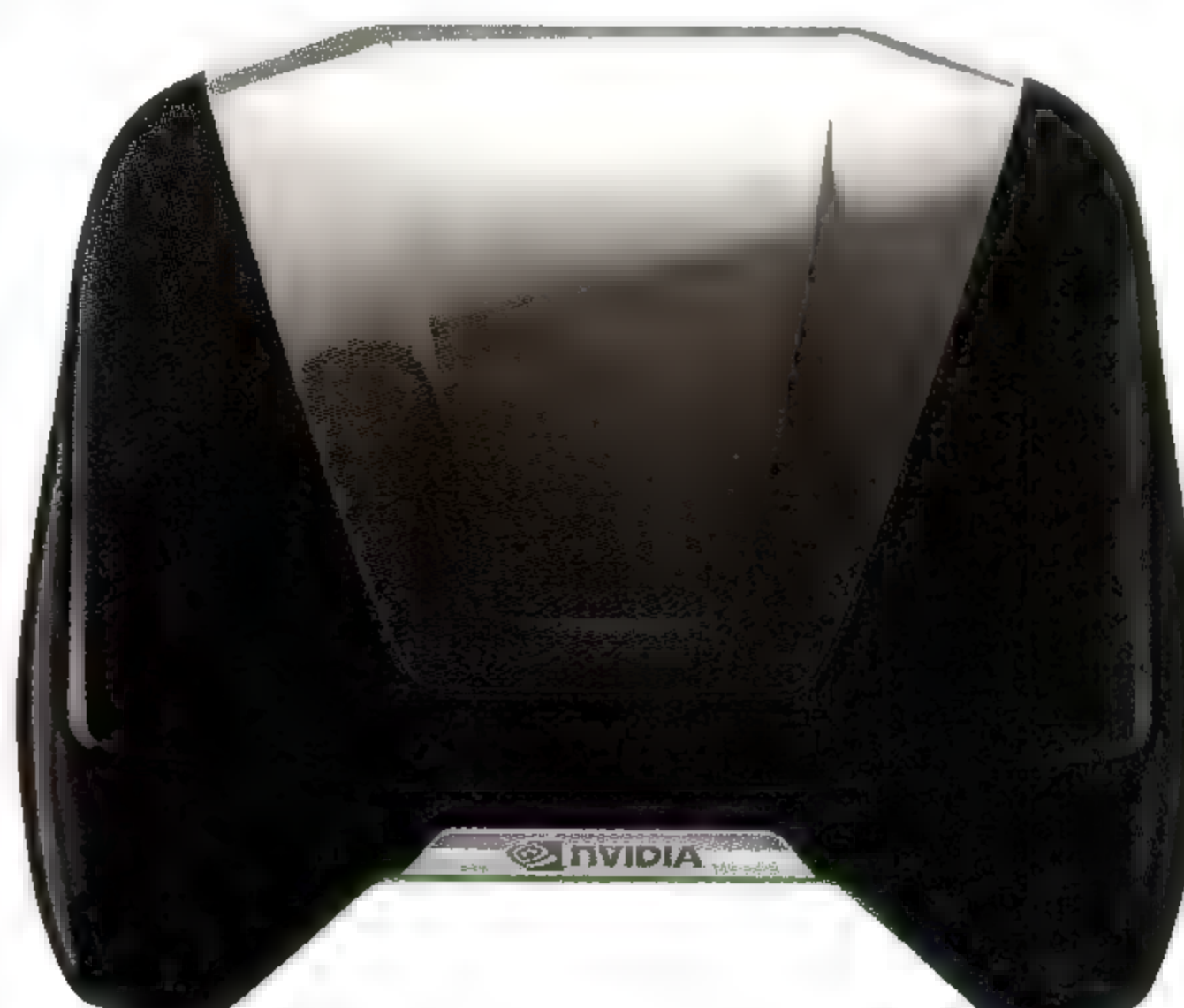
# NVIDIA SHIELD

**T**he Shield – possibly once codenamed Thor, as NVIDIA CEO Jen-Hsun Huang let slip during his keynote – features a Tegra 4 graphics chip (also announced at CES), an Xbox controller-like series of thumb-buttons and keys, and full connectivity via HDMI as well as SD card IO. Powered by Android, it can connect with other Shield

devices, TVs (and can pump out up to 4k resolutions), and even your PC.

The inbuilt display is 720p, and multi-touch capable. In demonstration of the device's power, we got to see a tantalising glimpse of an Android port of the mech game Hawken (previewed Issue 182).

Huang described the Shield as a “pure Android” device, but then went on to show off the Shield's compatibility with the just-announced Grid PC cloud gaming service.

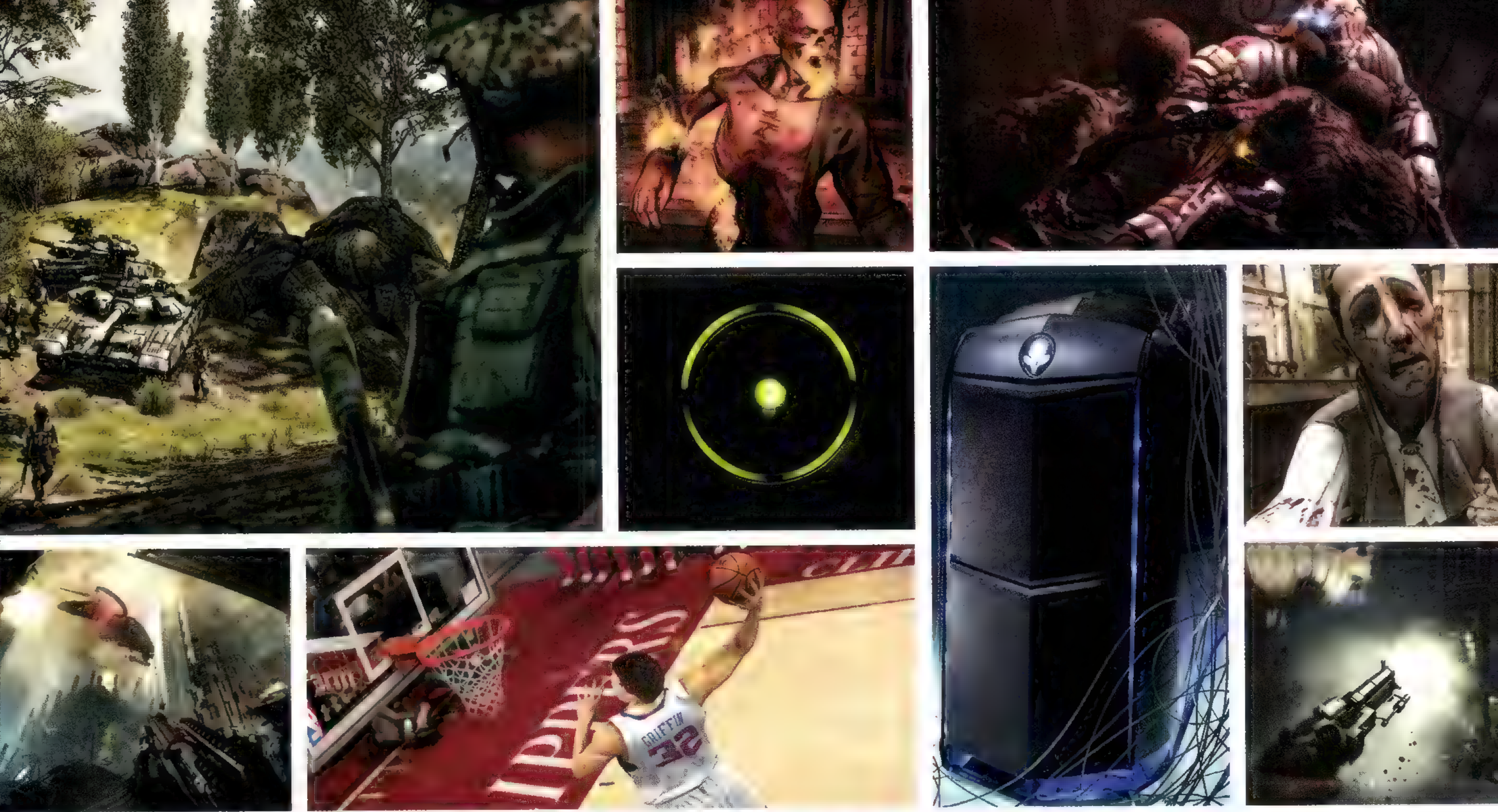


The demo on stage was a rocky one, but he eventually showed off the game pumping PC graphics from another device, onto the Shield's display.

Connected to Steam – which they did in the demo – Shield effectively works as a Steam box for your loungeroom.

It's a handy looking device, and PC connectivity certainly elevates it above similar handhelds. We can easily imagine the Shield working well for activities like farming and crafting in an MMO. It's a light task, and you could easily take care of it away from your PC – like watching TV or something similar. However, for pure PC innovation...





# Weighing in on the multiplatform development debate

WHAT WAS ONCE SEEMINGLY SLANTED ON THE SIDE OF 'PROSE ON CONS' HAS BECOME AN ISSUE WITH AN EVEN SMATTERING OF PROS AND CONS. NATHAN LAWRENCE DELVES INTO BOTH SIDES OF THE MULTIPLATFORM DEBATE.





**T**he term 'multiplatform' tends to provoke the ire of PC gamers, and with good reason. As PC veterans can attest, there used to be a time when the PC was the top dog in terms of developer and publisher interest. The allegiance of PC veterans was to a platform that revolutionised gaming, forged genres and pushed the boundaries of what gamers should expect from games and, perhaps more importantly, what developers and publishers should offer as the bare minimum of gaming inclusions: post-launch support, mod tools, and dedicated servers, to name but a few.

But all this has since changed. With the rise of console gaming and mobile gaming, publishers gained access to a new generation of gamers that were, more or less, a blank slate in terms of the expected content that PC veterans took for granted. It didn't take long for the so-called multiplatform titles to show their bias towards the Xbox 360 and/or PlayStation 3, even when they were also released on PC. Shoddy afterthought PC ports became the unfortunate expected norm for years and, one by one, once-assumed features dwindled: LAN support all but vanished, mod tools became a rarity, and dedicated servers became a feature that had to be lobbied for.

Thankfully, the eclipsing darkness of that age has mostly passed, and developers/publishers are, once again, starting to see the PC as a viable platform. That's not to say that PC is on an even keel with consoles, or close to being back at the top of the game consideration for developers; but there is, however, a marked improvement to the multiplatform development mentality.

### A SIMPLE, LOADED QUESTION

For the past year, we've asked almost every single relevant interviewee the same (somewhat loaded) question: "What are the challenges and triumphs of multiplatform development?" Some of the answers we received were little more than marketing rhetoric, while other responses expressed gratitude at being able to vent various issues with the process; others still, relief at being able to talk about the positives of developing across platforms. Here are the key things we learned from exploring this question with a variety of developers.

### PLATFORM PARITY IS PARAMOUNT

This was a recurring theme which, unfortunately, tended to preference



parity between console versions of a game, more so than PC. Given that the current-generation consoles are nearing the end of their respective cycles, it's a double-edged sword for multiplatform development that tends to lump the PC in with console considerations. On one side, developers have been working on Xbox 360 and PlayStation 3 development for close to 10 years now, so they have intimate working knowledge of the static-hardware systems.

On the other side, PC hardware has changed significantly since the launch of the Xbox 360, the first current-generation console, in November, 2005. Given the widespread industry modus operandi that preferences the supposed larger consumer base for the console market, platform parity equates to making the Xbox 360 and PlayStation 3 versions of a game look as close to identical as possible.

Tomb Raider art director Brian Horton confirmed as much when we asked him our multiplatform question. "The challenge is to make sure you have a consistent experience across multiple platforms. We [Crystal Dynamics] have a very focused thing of Xbox 360, PlayStation 3 and PC; and PlayStation and Xbox are very, very similar. PC obviously has its own advantages, but those two [console] versions, the challenge is to make sure that we're maximising the power of both systems, without making one look much different than the other." In shorthand, this recurring theme equates to current-generation consoles setting the standard for, at the very least, visual parity that is then upscaled for PC.

▲ id Software's *Rage* ended up suffering on PC thanks both to driver issues and a focus on squeezing the most out of console hardware.

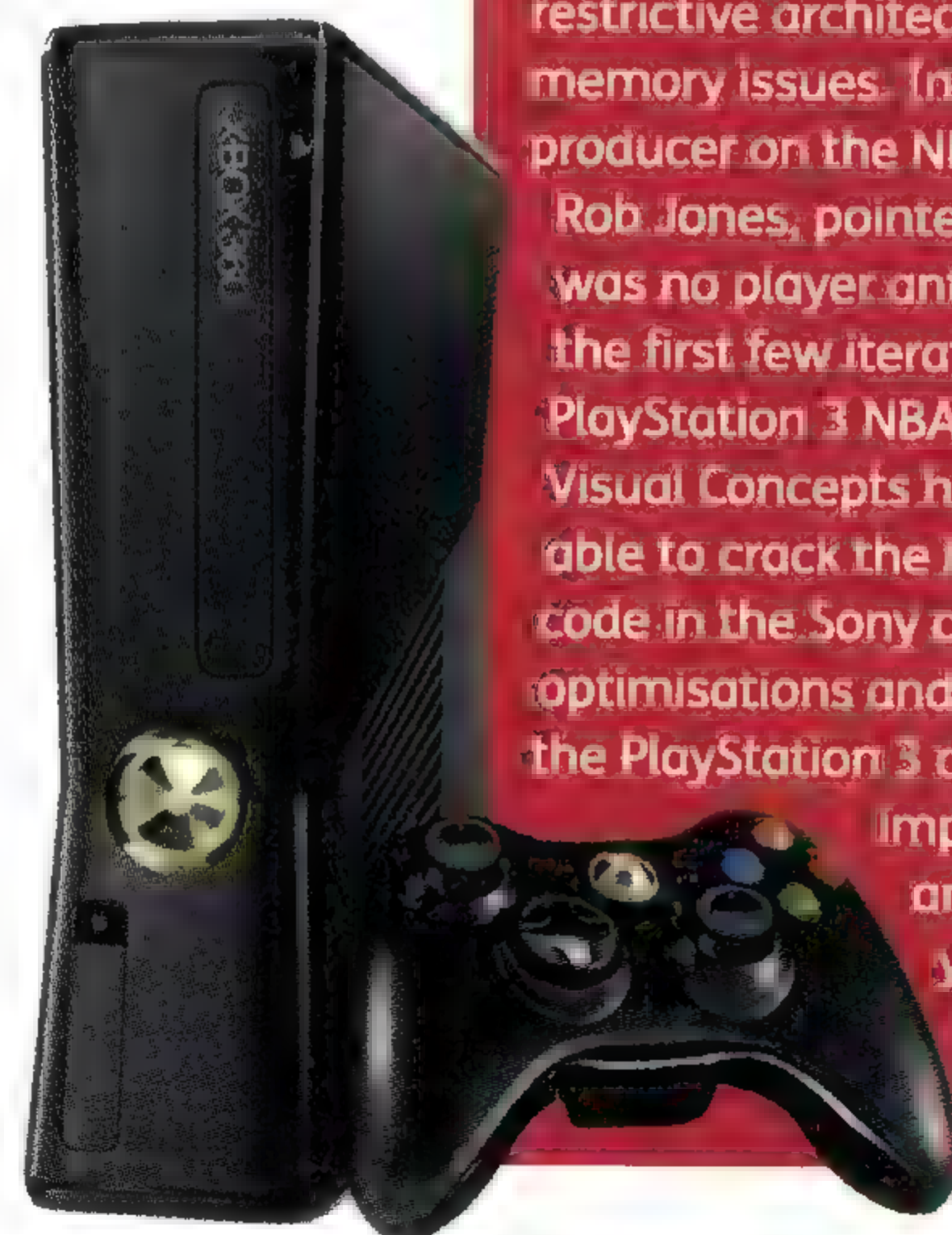
### PC IS ALREADY NEXT-GEN

One of the most refreshing comments from interviewees, most notably Cevat Yerli (CEO of *Crysis* developer Crytek), was that PC is already enjoying the next generation of gaming. Even if you take into account the rumoured specifications for the next generation of Xbox and PlayStation consoles, they still won't hold a candle to a high-end PC when they're eventually released; nor will they benefit in the long-term if they don't include the ability to upgrade core hardware.

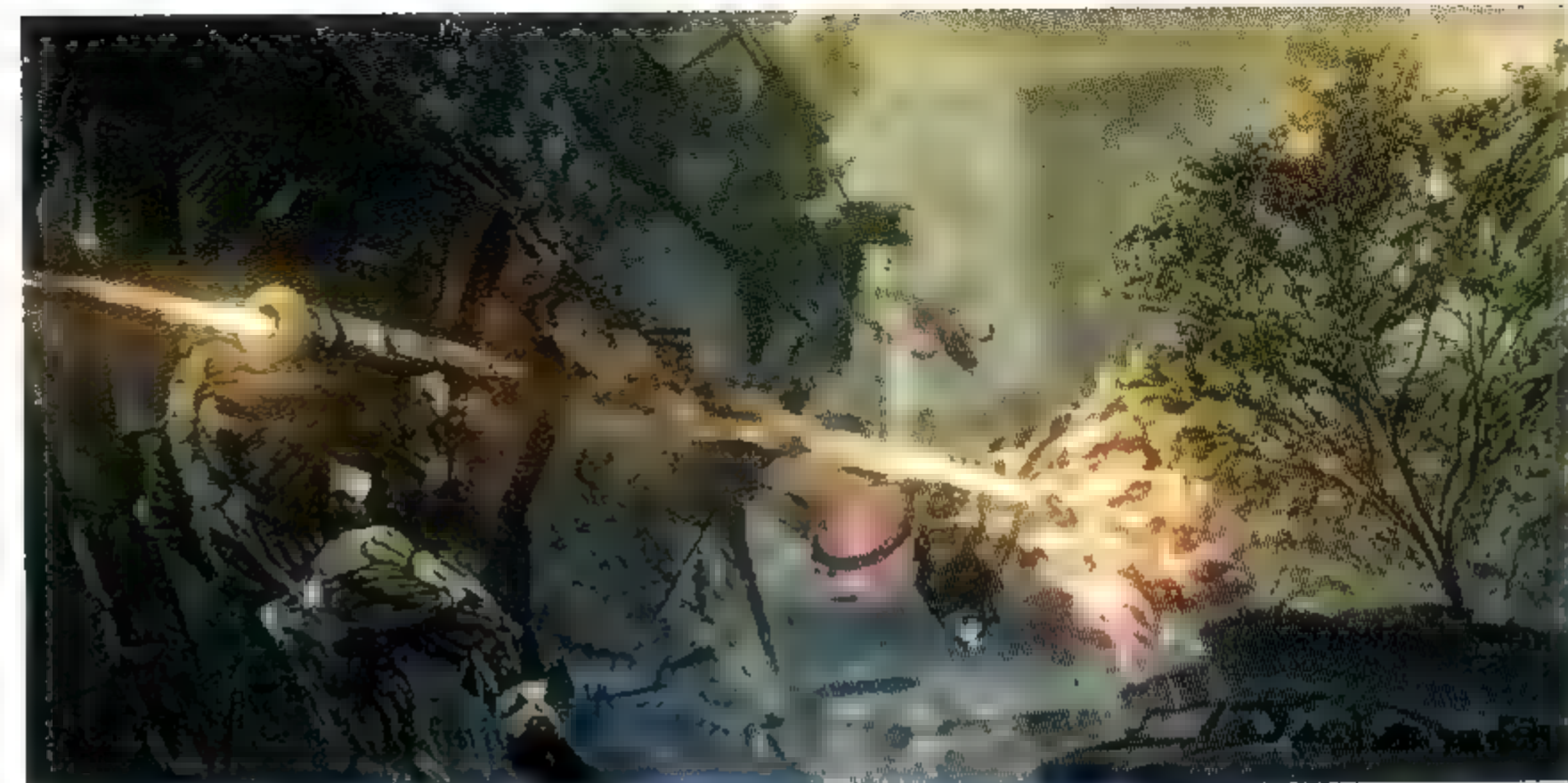
Titles such as *Crysis 3* are poised

### XBOX 360 IS CLOSER TO PC

This is in terms of development and, more specifically, in direct comparison to development challenges on the PlayStation 3. Several interviewees lamented over the difficulties of developing on the PlayStation 3, due to restrictive architecture and memory issues. In fact, senior producer on the *NBA 2K* series, Rob Jones, pointed out that there was no player anti-aliasing in the first few iterations of the PlayStation 3 *NBA 2K* titles as Visual Concepts hadn't been able to crack the hardware code in the Sony console. Later optimisations and familiarity with the PlayStation 3 allowed them to implement player anti-aliasing, years after the PC and Xbox 360.







▲ Crysis 3 promises to 'melt PCs' when it launches.

◀ NBA2K13 has a wide array of target platforms.

to melt PCs, while the Frostbite 2-powered Battlefield 3 looks significantly inferior on current-generation consoles when compared with the graphical potential of a high-end PC. Publishers are cluing onto the fact that visual fidelity is, once again, a crucial consideration best served on PC; and one that, we'd wager, is also influenced by the graphical potential of next-gen consoles. Because PC already offers next-gen performance, it's the perfect 'transcendent-generation' platform to subtly sell the visual-fidelity expectations of next-gen consoles to current-gen console owners. More and more games are being previewed on PC nowadays when, not so long ago, Xbox 360 was the go-to preview machine for multiplatform titles. The logic behind the increase in PC previewing is simple: unsurpassed visual fidelity on PC or, at the very least, the potential for it.

### CONSOLIDIFICATION ISN'T ALWAYS BAD

One of the main benefits of multiplatform development is universal improvements to controls and the user interface. Anyone that played the original PC-exclusive Crysis will most likely recall the clunky way the Nanosuit powers were controlled: holding down the middle mouse button and using a radial menu to select between powers, often when on the move. Fast-forward to the multiplatform Crysis 2, and the challenge Crytek faced of shifting the countless keystroke combinations of the keyboard/mouse combo to the limited buttons of a controller resulted in a better control – and thus better gameplay – experience on PC, too. The Nanosuit powers were boiled down to a choice between two core choices – stealth or armour – while functions such as jump and sprint drained suit energy without the need to select from

a radial menu. In short, it was a far more organic control scheme designed for console, which benefited PC, too.

For Crysis 3, though, Cevat explained that console-inspired optimisations are further-reaching than simple controller-based improvements. "Any optimisation we do on consoles, because of advantages on CPU- and GPU-based games, you can be sure that will also factor onto the PC running faster. There are many links – AI, physics performance, and the way we stream levels on console – all of which

## "More and more games are being previewed on PC instead of on consoles."

actually equate to improvements on PC, as well."

As for UI improvements, Dishonored is a recent example of a title that benefited from the challenges of multiplatform development. Before Dishonored, developer Arkane Studios developed exclusively for PC. Associate producer Seth Shain attributed universal improvements in user interface, controls and overall accessibility to challenges that arose in developing for consoles, a market which attracts a broader and more casual gaming audience (compared to PC gamers).

### DOOMED TO FRUSTRATE

At QuakeCon, id Software was proudly showing off Doom 3 – BFG Edition to press and public on PC, Xbox 360 and PlayStation 3. Creative Director, Tim Willits, complained that the booth volunteers only needed 15 minutes of explanation to run the respective console demos, but he'd brought in the head IT guy to ensure that the PC version was running as id intended. He acknowledged the awesome power of PC, but was quick to appreciate the simplicity of the 'turn on and play' logic of the consoles.

### MORE PLATFORMS, MORE MONEY

Cevat offered one of the most candid responses to our core multiplatform question. According to him, the reality is when developers go multiplatform they have access to more money. Despite the rise of digital distribution services (read: cash cows) such as Steam – which deliver games directly to gamers, (technically) bypassing retail overheads – publishers are still attracted to boxed games that can be sold to console owners. In fairness, the figures don't lie: multiplatform titles tend to sell better on consoles than on PC. Unless you're Valve, in which case titles such as Portal 2 sell better on PC than console. Go figure.

Cevat cast some brutally honest light on how multiplatform can equate to a better PC title, purely from a numbers-and-figures perspective. "I think one general aspect one has to understand is that if you make a multiplatform title, the budget is bigger. That means more money flows into your assets overall, which applies to all platforms. If [Crysis 3] was to be a PC-only title, it would not be as great as a multiplatform title. People never understand that, but it is the reality of economics: if you just make a PC game, your budget is going to be, at least, halved. Crysis 2 with half the budget would have been impossible. What I'm saying is the implicit benefit you get is a bigger budget, which means a better game for every platform." Tim Willits, creative director at id Software, added to the sentiment when we asked him about id's decision to go multiplatform on Rage. "Multiplatform is the way to go. Economically, it's the only way to stay in business. It would be very difficult to be a one-platform company."

### MULTIPLATFORM SPLITS FOCUS

For Dead Space 3 producer Jesse Abney, the multiplatform question reaped a divided answer that merged both challenges and triumphs into a single response, resulting in a picture that meant the positive and negative attributes can be linked. "Where do I start? It's dividing your resources and

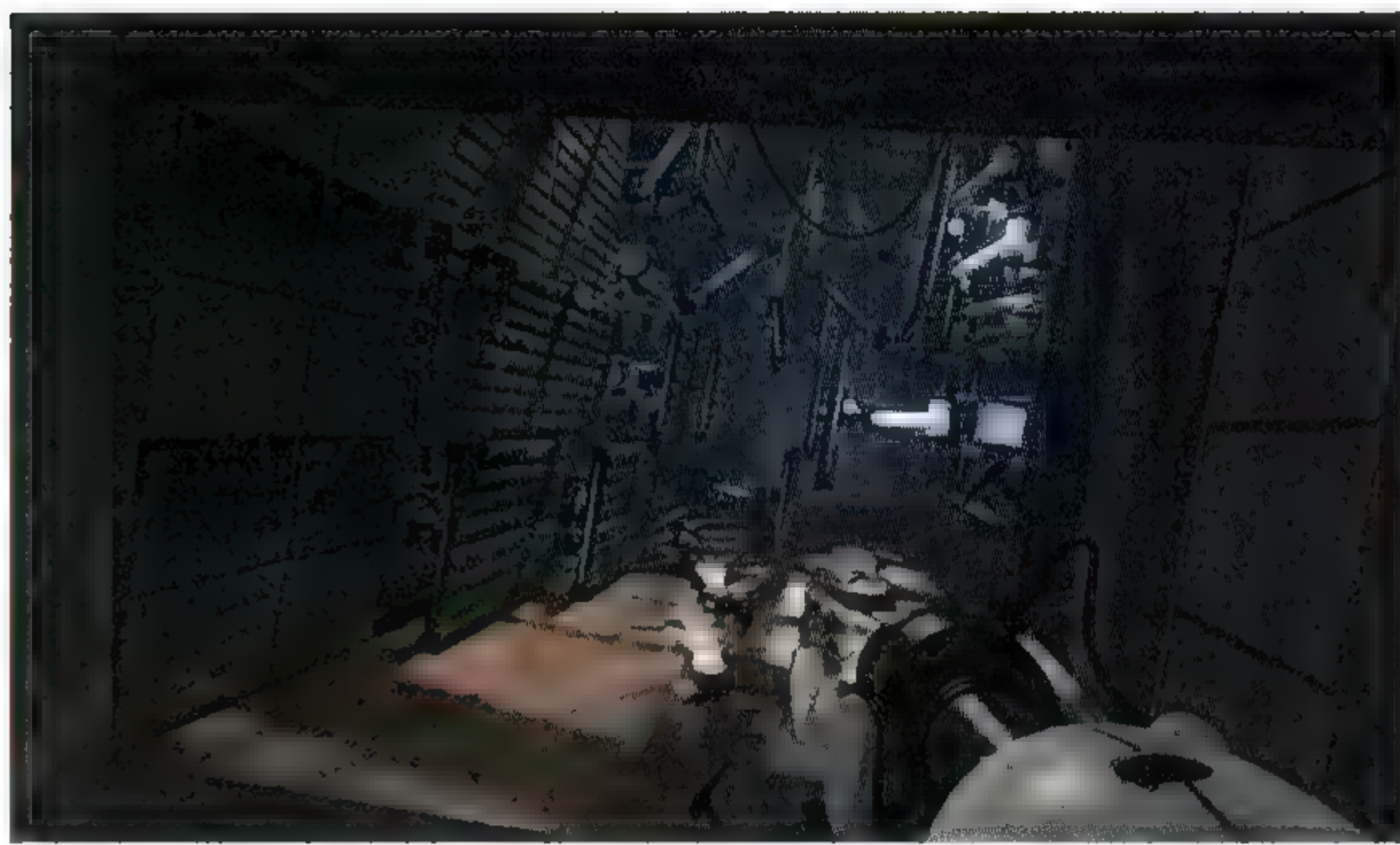


**“the reality is that when developers go multiplatform they have access to more money.”**

attention across multiple and different architectures, constraints and, at the end of the day, requirements and business partners. It's a plethora of challenges, top to bottom. It's something we're [Visceral Games] accustomed to; we build processes as standard for how we approach it, and obviously our business partners try to make it as easy as possible to bring our products to market on their platforms." He singled out the PC as the best example of a united challenge and triumph. "The PC platform obviously offers the most tech room, and the most performance and the most options for players, but also the most variables and unknowns across the widest market, and that's a challenge in itself."

### PC'S GREATEST STRENGTH IS ITS GREATEST WEAKNESS

PC enthusiasts will attest to the liberating budget-destroying potential of being able to upgrade computer hardware to give a computer extra grunt, an option that's unavailable to consoles beyond peripheral support. Given the sheer number of hardware and software variables on PC, post-launch support is more a necessity than a sign of developer laxness. Tim spoke frankly about the disappointment surrounding the ATI driver issues that haunted the release of *Rage* on PC; say what you will about *Rage*, there's no denying the embarrassment of a hardware manufacturer dropping the ball with driver support, which can taint the



▲ CLOCKWISE FROM TOP LEFT: *Portal 2* is one of the few titles that sold better on PC than on console; *Doom 3 BFG* was significantly easier for id Software to demo on console than PC; *Battlefield 3* is noticeably better looking on PC than on consoles.

launch of any game. When debugging games for consoles, developers are working with fixed hardware and software restraints. On PC, it's more of a headache for developers to fine-tune a game thanks to the countless combinations of end-user hardware and software - sometimes unforeseeable combinations that can influence the performance of a game.

### PLAYING TO WIN, WHEN YOU CAN'T WIN

The reality of multiplatform development, though, is that compromise occurs at almost every step of development. The importance of visual parity between warring consoles is always going to be offset by a PC community that (justifiably) feels slighted when games are

▼ Developers have squeezed as much visual fidelity as possible out of the current consoles



shoddily ported, features cut and the potential of the likes of DirectX 11 - a significant point of difference on the visual-fidelity front - is watered down. Criterion Games' creative director Alex Ward broke down the uphill battle of multiplatform development. "If you're a single platform, you're going to be very bespoke about pushing all the individual buttons of that hardware. Go multiplatform, and there have got to be more compromises involved. The challenge is you can never win. People are always going to feel short-changed."

Alex has identified the true crux of the debate: any system that receives extra attention on a multiplatform title does so at the cost of performance potential on the other platforms. In this respect, even the DICEs and Cryteks of the gaming world who brag about PC as lead platform on their latest titles have to compromise when it comes to console versions of their games, if only when it comes to presenting a less-attractive vision of their game. Harder still, the PC gaming community is incredibly vocal when it comes to its disappointment with multiplatform titles, even when PC is lead platform. At the end of the day, though, it's difficult not to discover a newfound respect for the creative solutions developers unlock in multiplatform development and an even greater appreciation for the multiplatform pros hidden beneath the surface-level cons.



### PC TAKES THE LEAD

Using the soon-to-be-released *Crysis 3* as an example, Cevat highlighted just how far ahead of consoles the PC is and, most refreshingly, the benefits of developing with PC as a lead platform. "This time around, because PC is so far ahead in terms of gameplay and technology, we pushed that further and we've had to figure out how to do that on consoles. In the worst case, it has to compromise here and there. But so far we're not compromising on consoles, which is amazing that we are finding new ways to still make it happen. There are, of course, some compromises in terms of visual fidelity and resolution. On PC, *Crysis 3* will just look phenomenal."



# GAMES TO WATCH FOR IN 2013

There is a tonne of great games in the pipeline for this year, so cutting down our list to a lean top ten of the titles we're most excited about was no mean feat. There was much um-ing and ah-ing, gnashing of teeth, and no small amount of bullying. But, in the end, we've found a list that pretty much sums up why we hope that 2013 will be an epic year for gamers.



## STAR WARS 1313 LUCASARTS, ALL PLATFORMS

It is going to be so nice to play a Star Wars game that isn't full of Jedi. Once upon a time, it was possible to get excited about the chance to use a lightsaber, like in Dark Forces II: Jedi Knight; now, it's over-saturated. Thankfully, Star Wars 1313's bounty hunter hero has to rely on luck and a blaster, and we're very thankful.

1313 refers to the level of the super-city-planet Coruscant where the game takes place.

It's deep underground (under-street?), and a veritable hive of wretched scum and villainy. The plot focuses around catching bad guys, and uncovering a wider criminal conspiracy, so we're expecting a lot of gritty, dark action. Early developer diaries have also shown the game being played in 64-bit mode with DX11 rendering, and it looks fantastic.



## TOTAL WAR: ROME 2

CREATIVE ASSEMBLY, PC

There is something mesmerising about being able to watch vast armies march into battle, whole units of infantry and cavalry clashing across miles of landscape, and then zooming down to see what individual soldiers are doing in the fight. The Total War series has always had this quality, but Rome 2 is taking it to a whole new level, with more soldier detail than ever before.

Which is not to say the grand scope isn't there. You'll be able to command one of three Roman factions, and other factions beside, like the Carthaginians, in your mission to dominate all of the ancient world.

There's not been a bad Total War game yet, and Rome 2 is looking like another fine addition to the series.

## WASTELAND 2

INXILE ENTERTAINMENT, OBSIDIAN ENTERTAINMENT, PC

This is the sequel to a classic isometric RPG from back in the golden days of 1988, and it's yet another example of just how powerful the crowdsourcing engine of Kickstarter can be.

The game's producer, Brian Fargo, has waited years to reclaim the rights to the game, and then started work on the title last decade. But it was Kickstarter that really got the game going, generating \$2.9 million dollars in funding, and also the backing of Obsidian Entertainment. Many of the original writers and developers are back on board too, so this is going to be the real deal.

The game is a post-apocalyptic, party-based RPG (the original inspired Fallout), set in a world nearly wiped out by a meteor strike. There's a distinct Western feel to the game, and early art is looking supremely inspiring.



## SIMCITY

MAXIS, PC

In terms of sheer delight, there's nothing on the horizon at the moment that looks like it can top SimCity. This new iteration of the game is brighter, colourful and more graphically impressive than ever before. The tilt-shift inspired art-style is particularly striking.

But it's the mechanics of the game's simulation that's looking really impressive. Rather than basing the game on raw data to drive what you see on screen, the game generates actual agents which in turn generate traffic, pedestrians, and more. Game audio is also generated by every agent and building, creating a soundscape that is just as informative as the visual data.

And it has bank robbers, monster attacks and multiplayer. This is already looking like one of the early Games of the Year.



## CLANG

SUBUTAI CORPORATION, PC

If you've ever read any Neal Stephenson, you'll know he's got a bit of a thing for swords. In fact, in real life, he's quite the swordsman himself. Clang is his successfully Kickstarter-backed attempt to bring real sword-play techniques to a PC game, and it sounds really interesting – arena-based combat, a whole new way to recreate combat, and an ongoing story and plot, all backed by rigorous research into real weapon physics.

Yeah, this one's a little exciting, and pure PC – what's not to like?





## WATCH DOGS

**UBISOFT MONTREAL, ALL PLATFORMS**

If there was one game that no one was expecting at last year's E3, this was it – this open-world game that mixes investigation, hacking, driving, and killer graphics. It's a near-future piece where the protagonist, Aiden Pearce, has access to a city-spanning network called ctOS. If you've seen any of the TV show Person of Interest, you pretty much know the deal – you need to hack phones and computers to get info on targets and what they're doing, and then similarly use the environment, like getting traffic lights to change to cause a massive car accident. When the inevitable action does break out, it combines the fluid movement of Assassin's Creed with cover-based combat with lots of action movie flourishes.

Information on the game is pretty light, but just from the E3 showing alone this looks like an amazing amalgam of genres, and one of the best looking games of the year.

## PREY 2

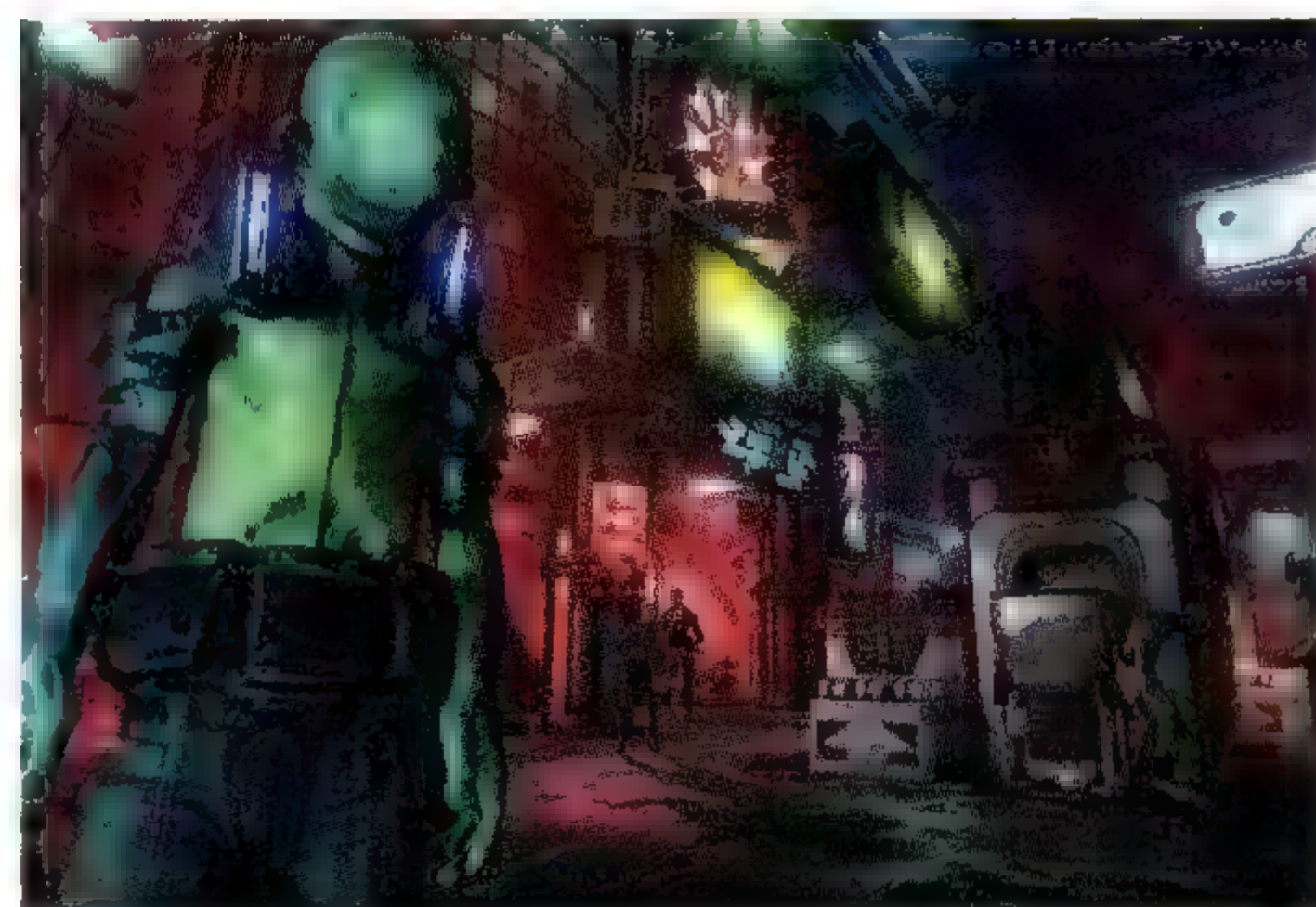
**HUMAN HEAD STUDIOS, ALL PLATFORMS**

Oh, Prey 2... where are you?

This was the sneak hit of E3 2011, with everyone who saw the action-packed demo walking away excited. The game mixed fluid free-running style action with some serious FPS combat, along with a lot of great SF gadgets and toys. You play a human bounty hunter trapped on a Bladerunner-esque planet packed with aliens, and the look and feel of the game was outstanding.

Sadly, though, the game appears to have fallen on hard times. It slipped a 2012 release date, and rumours circulated that the game was cancelled. Publisher Bethesda has publicly denied this, but problems between developers and the publisher suggest all is not well with the game.

We're hoping that 2013 will see this game back on track, and in our hands. The idea that such a promising, innovative game could just die is too depressing.



## WORLD OF DARKNESS CROWD CONTROL PRODUCTIONS, PC

Combine vampires, deep and dangerous politics, and a goth sensibility so sharp it'll make you bleed, and you've got the pen and paper game Vampire: The Masquerade. That game's had the video game treatment before, courtesy of the still classic Vampire: Bloodlines, and now it's getting it again – and with a distinct MMO twist, to boot!

The World of Darkness brings those dangerous politics of vampire clan warfare to life, courtesy of the developers of MMO Eve

Online. WoD focuses more on player politics, though, with all kinds of rumoured mechanics to simulate the backstabbing and politicking of the game.

It really is a perfect fit for an MMO, and should be strengthened by the fact that the World of Darkness IP is actually owned by the developers, giving them a lot more freedom than a third party licence would.

Bags me a Toreador with a penchant for Katanas – I'm nothing if not predictable.



## WORLD OF WARSHIPS WARGAMING.NET, PC

Mere words cannot encapsulate our excitement over this naval warfare title. Made by the same people who delivered the addictive and exciting World of Tanks, World of Warships is all about, well, battleships – and aircraft carriers, submarines, destroyers, cruisers... oh my!

The game will be massively multiplayer, similarly to World of Tanks, and if it can bring the same sense of detailed warfare to the

high seas, with intricate damage mechanics, XP-based research and upgrades, all feeding into tightly balanced games of intense naval combat... well, I'm excited just writing about it.

Wargaming.net is on a roll at the moment and also has World of Warplanes coming out this year, which is likely to be to flight sim enthusiasts what World of Warships is to me – pure gaming crack.

## DAYZ STANDALONE BOHEMIA INTERACTIVE, PC

We should have had this game already, but the lead dev wants to wait until the game is up to scratch before releasing it. Given the game's scope, we're willing to let him err on the side of caution.

Based on the super-successful mod for ARMA II of the same name, the standalone version has full publisher backing, and is immensely more epic in scope. With improved graphics, fully re-tooled inventory system, and a whole load of more building interiors, this gritty zombie survival game cannot come soon enough.

I'm sure I'll change my mind the first time I break a leg and have to crawl a mile to find medical help, only to be shot by another player. Actually, no I won't – I love this game!







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# DMC: DEVIL MAY CRY

NOT ONLY A HIGHLY ENJOYABLE COMBAT EXPERIENCE, BUT ONE OF THE BEST-LOOKING GAMES TO GRACE THE PC IN SOME TIME.

**DEVELOPER** Ninja Theory

**PUBLISHER** Capcom

**WEBSITE** [www.devilmaycry.com](http://www.devilmaycry.com)

**S**pend some time on the corners of the internet where Devil May Cry fans hang out, and you'd be forgiven for believing that DmC is a crime against humanity. For Capcom has apparently committed a great sin by rebooting the venerable game series with a more Western slant, changing the look of main character Dante from an older white haired dude in a red trenchcoat to a younger black haired dude in a blue trenchcoat.

It is one of those situations where intense fandom seems detached from reality – our memories of Devil May Cry games reviewed in days gone by were titles in which story flitted between nonsensical and irrelevant, where the main focus was on fluid, fast combat rather than caring which demon was doing what to whom.

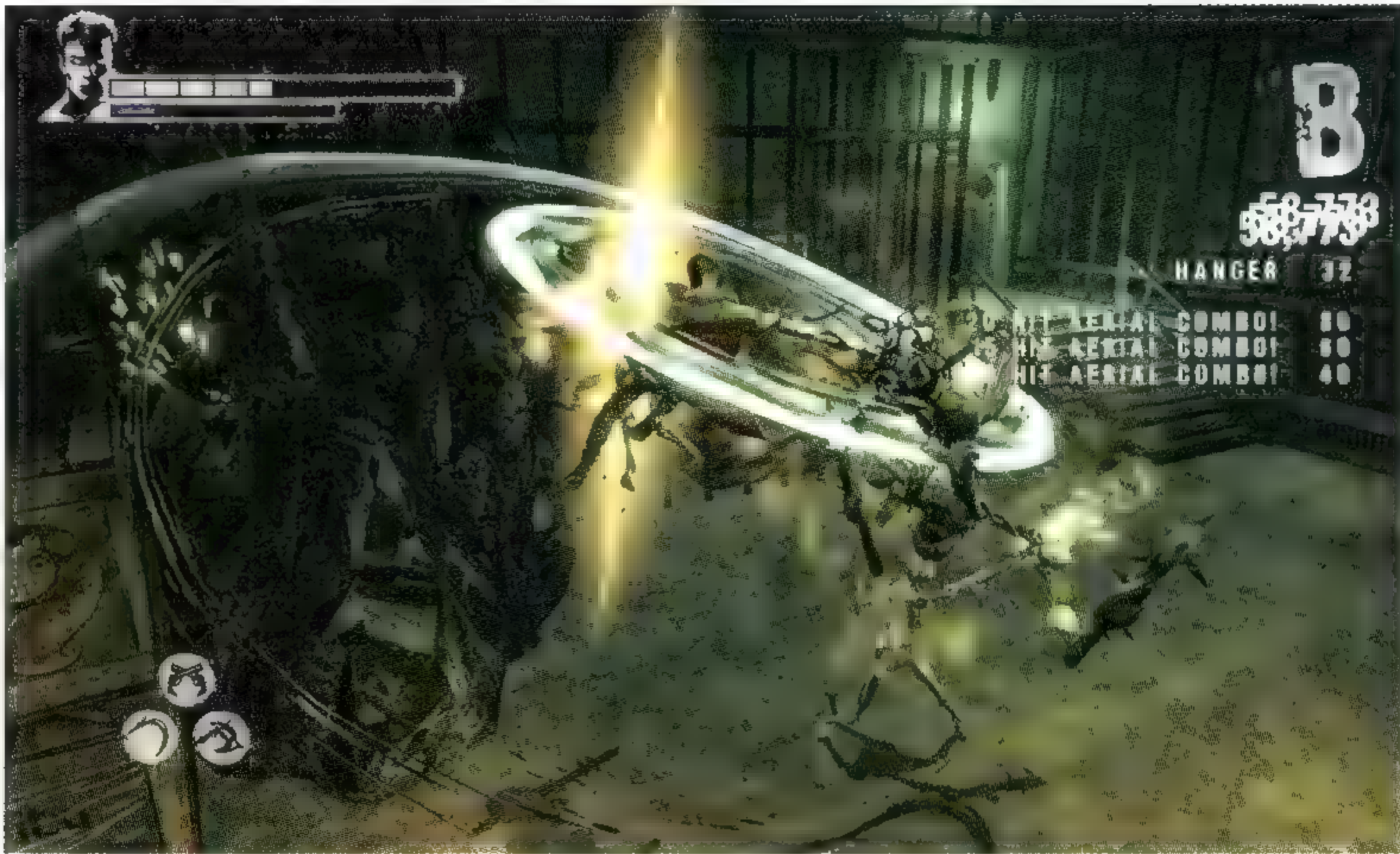
From the moment you run DmC it becomes clear that, for the vast majority of gamers, this reboot is an incredibly good thing. Not only does it have some of the finest hack and slash combat that we have encountered on the PC, but its protagonist is fleshed out and much more interesting than the white haired tabula rasa that was Dante of old.

Dante 2.0 starts out as the kind of guy you want to reach through the screen and punch, but actually becomes quite interesting as the game progresses, thanks largely to some incredible animation work done during the cutscenes that tie the story together. The story revolves largely around an amnesiac Dante discovering the fact he is the progeny of Demon and Angel, and then using this knowledge to slice, dice and shoot many, many demons into little pieces.

For, while the story is a step above anything that has come before it in







the franchise, DmC is still a game heavily rooted in hacking and slashing. What developers Ninja Theory have delivered is an experience that is fast and fluid, with big outlandish combos and the potential for a near ridiculous number of moves. Dante is armed with a variety of weapons, initially just standard swords and his iconic guns Ebony and Ivory, which are soon joined by the angelic Osiris scythe and the demonic Arbiter axe. Each weapon set has specific advantages and disadvantages, and your array of combat moves can be expanded through an unlock system.

This variety of weapons makes for a game best played with a controller rather than keyboard and mouse. To access the fast attacks of Osiris you hold down the left trigger, for the slow, shield-breaking Arbiter you hold down the right. Hold neither and you'll use your standard swords. This facilitates a hugely varied combat experience, and it doesn't take long before you are stringing moves together for some truly enjoyable demon killing.

It isn't perfect, and falls over a bit in the 'recognise pattern and comply' boss fights, but for the vast majority of DmC the combat shines, and makes this a very special game indeed.

Complementing this combat are some amazing visuals, which really come into their own on the PC, where options can be cranked well beyond what consoles are capable of. It is one of the few games that has made our PC's cooling fans spin up to full, as we bathed in the bright, colourful and decidedly trippy world that Ninja Theory has delivered.

Limbo City, where the game is set, is a wonderful creation, a seemingly normal city that hides a demonic secret. Actual combat takes place in Limbo, a twisted shadow version of



PC • Xbox 360 • PS3

the city, full of demons and providing for an interesting twist to the story when you return to the real world. It truly is a gorgeous piece of digital art, and the sheer colourful nature of the experience is such a breath of fresh air in a genre that usually ends up delivering 50 shades of brown.

At times it is hard to believe that DmC has Unreal 3 running underneath it all. The PC version has the kind of look we expect from the next gen consoles, and managed to do so with smooth framerates and fast action.

If you aren't a fan of hack and slash combat, then there isn't anything in DmC: Devil May Cry to appeal. But for fans of fast, fluid combat and ridiculously elaborate combos then there is no finer game on the PC. Add to that the fantastic visuals and a story that is ludicrous but sensical, and this is one of the more pleasant surprises of recent times. This isn't the Dante of old, but after playing DmC we can't help but think that is a very, very good thing indeed.

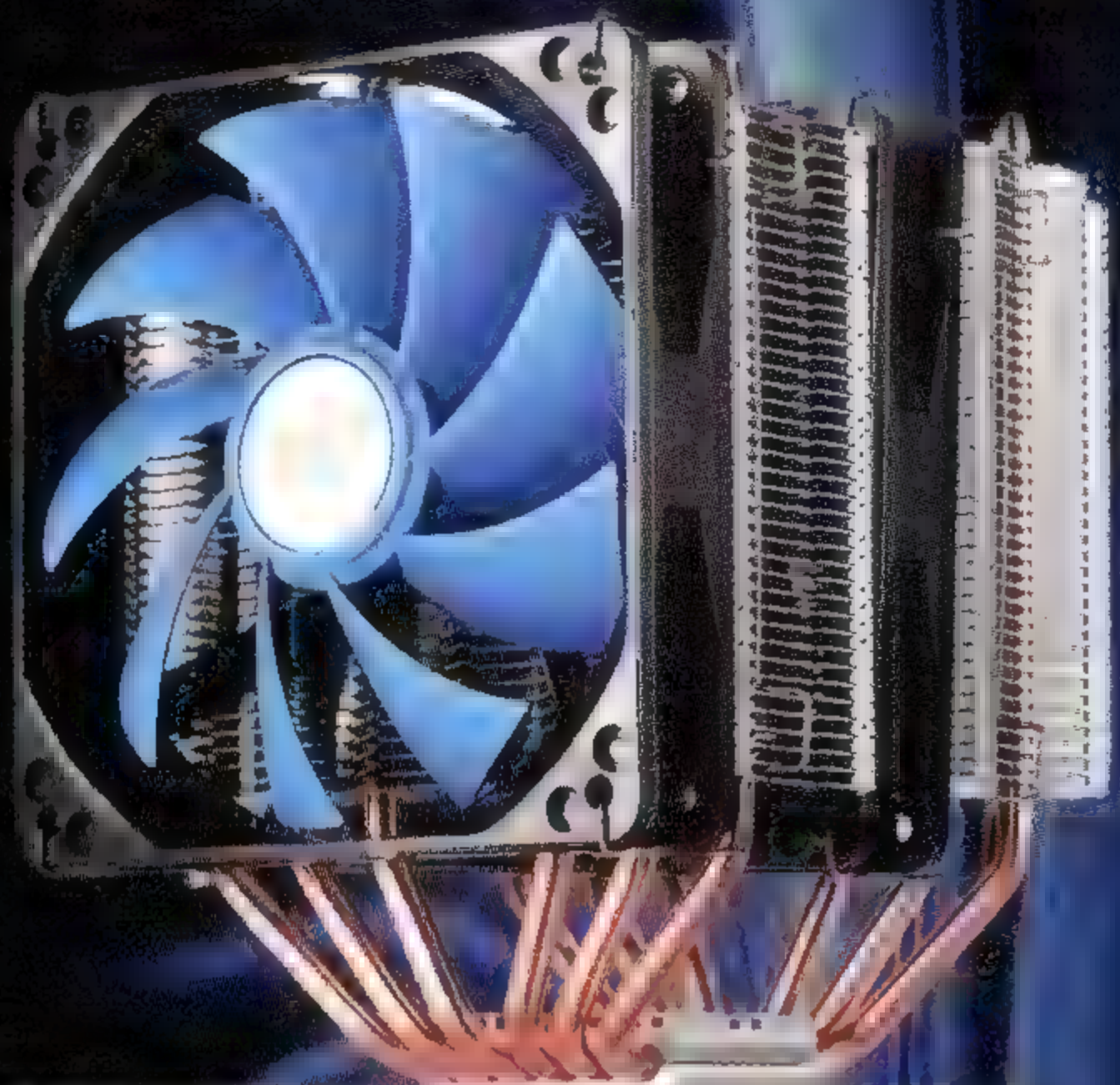
**John Gillooly**





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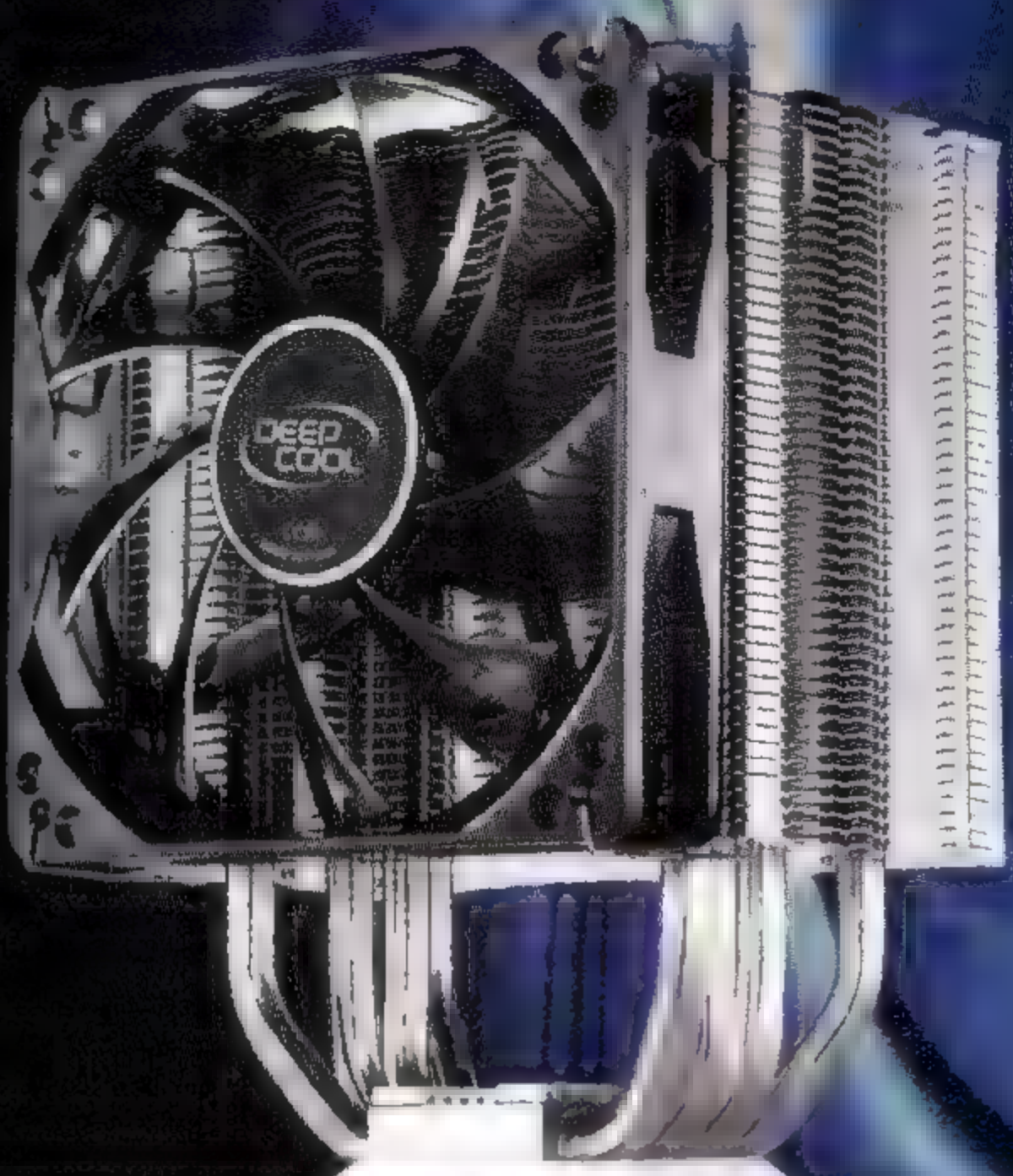
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## CRYSIS 3 PREVIEW

GETTING TO PLAY ON BOTH PC AND XBOX 360  
REVEALS A NOT-SO-STARTLING REVELATION ABOUT  
PC VISUAL FIDELITY.

**DEVELOPER** Crytek  
**PUBLISHER** EA  
**WEBSITE** [www.crysis.com/au](http://www.crysis.com/au)

**W**hile the multiplatform Crysis 2 wasn't true to the computer-melting legacy of the original PC-exclusive Crysis, it still looked a damn sight prettier on PC than it did on console. With Crysis 3, the visual divide between ageing current-generation consoles and the ever-advancing PC is perfectly demonstrated by the rounded DirectX 11 power of the latter, and the decidedly blockier reality of pushing the Xbox 360 to its limits.

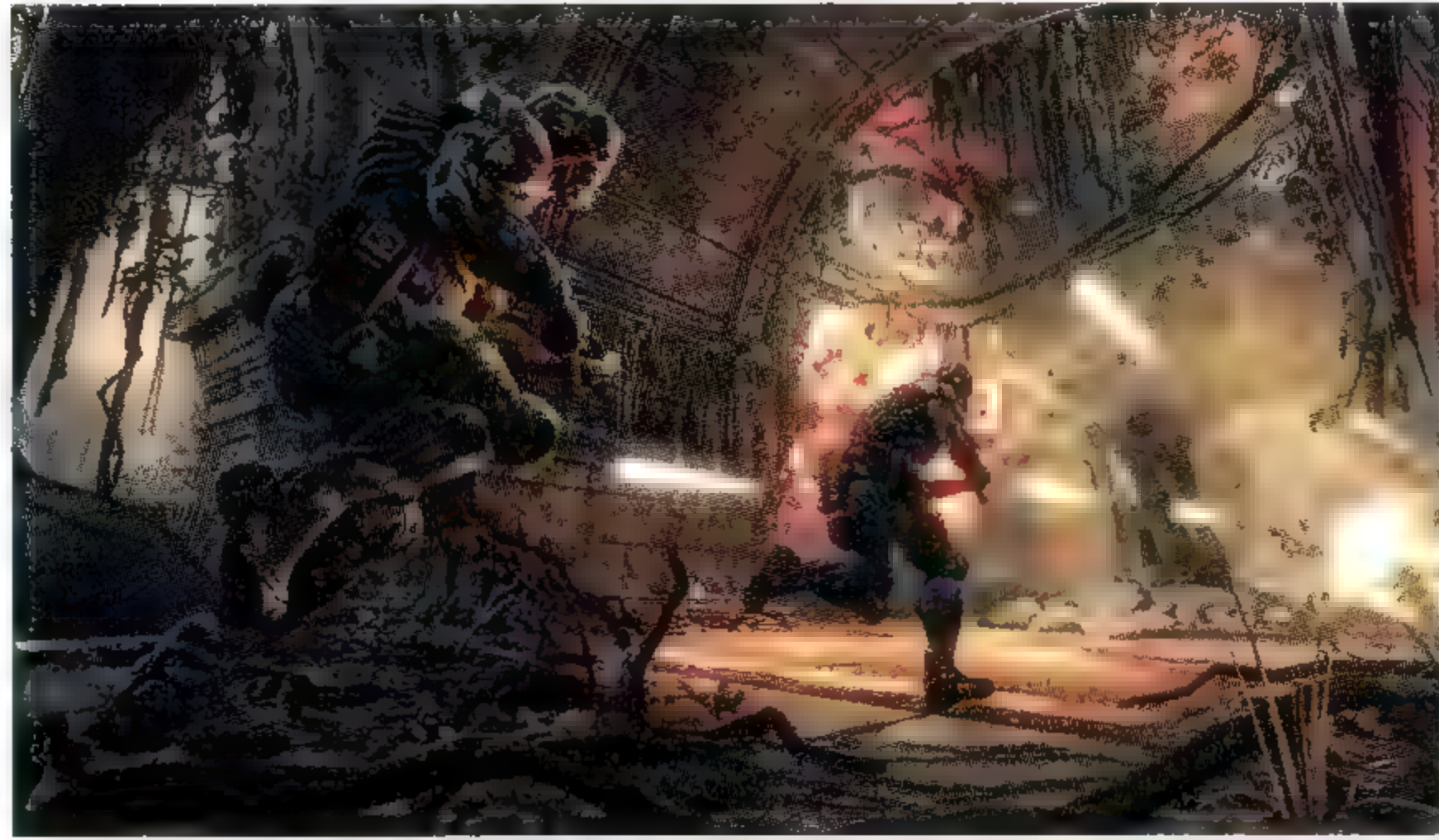
Granted, I actually spent more time with the Xbox 360 version of the game, thanks to a short (around 10 minutes) PC single-player demo, and the addictive Hunter mode being offered on Xbox 360 (with eight system-linked consoles). Despite the short length of the PC demo, it was fantastic to play through a section of the campaign that started out in a confined area, and then opened right up to show an awesome merging of the openness of Crysis with

the exploration of vertical space (or, "verticality", if you prefer the industry term) that was introduced in Crysis 2.

C.E.L.L. troops were everywhere in the abandoned train station at the start of the level but were no match for the Nanosuit-powered protagonist. Whether playing stealthy – crouched and cloaked, shooting enemies in the head with arrows – or running in loud and proud with guns blazing, the poor C.E.L.L. troops didn't stand much of a chance. Sure, they used grenades, cover and flanking manoeuvres – par for the course when it comes to enemy AI these days – but the Nanosuit allowed me to activate camouflage for speedy (and invisible) relocating, or to jack up my armour to become a bipedal tank as I charged down troops with a shotgun or LMG.

There were plenty of troops and stationary turrets, but they really didn't stand a chance. When I finally shot my way out of the station, though, I was in for a change of pace. First and foremost, the scope of the outdoor area was incredibly reminiscent of the





abundance of open areas in Crysis. A field littered with long grass and wrecks of carriages abandoned long ago was a beautiful sight to behold, albeit immediately offset by the fact that I, the hunter, was being hunted.

It wasn't C.E.L.L. troops this time around, though; instead, it was creepy Velociraptor-like Ceraph foes that were stalking me through the long grass. I should have been terrified of their hit-and-run tactics. I should have stuck to moving between elevated positions to get a bead on the silver bastards as they moved through the grass. Being the aggressive player that I am, I decided to take the fight to them; well, as much as one can in long grass with limited 360-degree visibility.

Using audio cues from the headphones (is there any other way to play an FPS?), I sprinted in the direction of the circling Ceraph and gave them a buckshot greeting to the face. When they tried to circle around behind me,

PC • Xbox 360 • PS3

I held down Spacebar to activate the Nanosuit's supercharged jump ability and launch myself high into the air for an aerial view of the stalkers, realigning my hunting path upon landing, or simply shooting them from above. Either way, it emphasised just a few of the many ways you could choose to tackle these particular foes.

The whole time, I was being goaded on by Psycho – a returning character from Crysis and Crysis Warhead – who was urging me to hurry to his position. Once there, I jumped on a fixed turret and went through the motions of an unfortunately generic turret section. Waves of Ceraph came at me from one of a few predictable directions, and I mowed them down. Rinse and repeat. The whole time, I couldn't help but think how much harder it would be on console, without the aiming accuracy of a mouse.

This concern became more relevant when I jumped onto the Xbox 360

version of Crysis 3 to test out a new map in the incredibly cool Hunter mode. It may not be entirely original in concept, but Hunter mode is basically an infected game mode, whereby almost every player starts as a sub-machinegun-toting C.E.L.L. operative, and one or two players start as Nanosuit-clad hunters. Every time a hunter kills a C.E.L.L. player, that player respawns as a hunter. This repeats until all operatives have been killed, or the (short) time limit runs out.

When I first played this on a different map at gamescom last year, there wasn't a round that was won by C.E.L.L. operatives; no matter how hard we worked as a team, or in smaller groups. It was a frantic mode that showed a lot of potential – particularly when you imagine the speed at which it will be played on PC when the accuracy of the mouse makes the one-hit-kill bow an incredibly fearsome weapon. With the new airport-based map, though, the tables were flipped, and there wasn't a round where C.E.L.L. didn't beat the clock.

The script flip was so extreme that matches quickly turned into C.E.L.L. operatives hunting down the supposed hunters – a feat that's made none-too-easy by the fact that the hunters are perpetually cloaked. This, in turn, was made stranger by the tight design of the map. If anything, on paper, it should have been too easy for the hunters to win, especially considering how easy it is to track and spot C.E.L.L. players when in the Nanosuit. Still, even the inversion on the mode was a lot of fun, albeit with the regular PC-to-console frustrations of feeling handicapped when it comes to aiming, with many firefights rapidly deteriorating into a whole lot of spray-and-pray scenarios.

Suffice it to say, the promise of the short single-player section combined with the fun of Hunter mode has me tentatively excited for a new Crysis game that's more in line with everything that was great about the original title.

**Nathan Lawrence**







## FUSE PREVIEW

THE GENERIC THIRD PERSON COVER SHOOTER LOOKS LIKE IT HAS A NEW POSTER CHILD.

**DEVELOPER** Insomniac Games  
**PUBLISHER** EA  
**WEBSITE** [www.insomniacgames.com/games/fuse](http://www.insomniacgames.com/games/fuse)

**PLATFORMS**  
 Xbox 360 • PS3

Normally when a game makes a dramatic change of art style mid development it's to liven up a bland looking product. The standout example of recent times is Gearbox Software's *Borderlands*, which never started out with its distinct, cartoonish style, instead looking uncannily like id Software's gritty post-apocalyptic shooter, *Rage*. In many ways, the shift in style was key to *Borderlands* becoming one of the few breakout franchises in recent years, which makes us scratch our heads when we think about the graphical shift made by Insomniac with *Fuse*.

*Fuse* started out life as *Overstrike*, a cartoonish action title with a distinctly *Team Fortress 2* meets *No One Lives Forever* look and comedic feel. What we played during EA's preview event felt like a game with the personality sucked out of it, thanks to a graphical shift that now

has it looking like a generic, everyday third person cover shooter.

We cannot fathom why Insomniac would make such a change at a time in the console cycle where new IP is notoriously difficult to launch. Whereas *Overstrike* once made us curious, *Fuse* is visually forgettable, with the colour palette ranging from brownish grey to greenish grey, with the occasional splash of "weapon and explosion orange".

Add to this a team of four characters, each with unique abilities that lack differentiation, and the game quickly feels like a whole pile of other titles from recent years. There is the sniper dude, who packs a crossbow; a healer who is, of course, female; the big soldier guy who has a shield ability and finally the stealth chick.

Insomniac has designed *Fuse* around four person co-operative play, in which each of the team's abilities work well together. Unfortunately, because of network difficulties at the preview event, the planned co-op sessions didn't eventuate, and instead we had a chance to play the single player mode of the



game, in which you are stuck with AI teammates and the ability to switch between characters at will.

One of the major problems with this kind of approach to a very teamwork-focused game design is that your AI code needs to be spectacular. In the build we played it wasn't, and what eventuated was a whole lot of jumping between lone wolves with jarringly different abilities, rather than the slick efforts of a well-coordinated team of alien fighting soldiers. The gameplay itself was solid enough for a cover shooter, but the special abilities felt situational at best. It was akin to swapping weapons in other games, except in *Fuse* such a swap means jumping to another team member, in a different spot with different immediate threats to the ones your current character is facing.

What ultimately worries us the most is that this jarring single player experience indicates a game that only shines when played co-op by four people who actively coordinate. If you watch the trailers for *Fuse*, there is a huge focus on players grouping up behind soldier guy's shield and using their abilities in unison, rather than all running off in different directions and lone wolfing it. It remains to be seen if Insomniac can do enough to encourage the correct kind of play.

Maybe the preview was a poorly selected part of the game, and our experience definitely suffered from the lack of co-op play. But we really worry that the dramatic shift in graphical style and name is indicative of bigger issues with the title, and that even EA and Insomniac are struggling to turn *Fuse* into something that will make an impact when it launches in a few months.

**John Gillooly**





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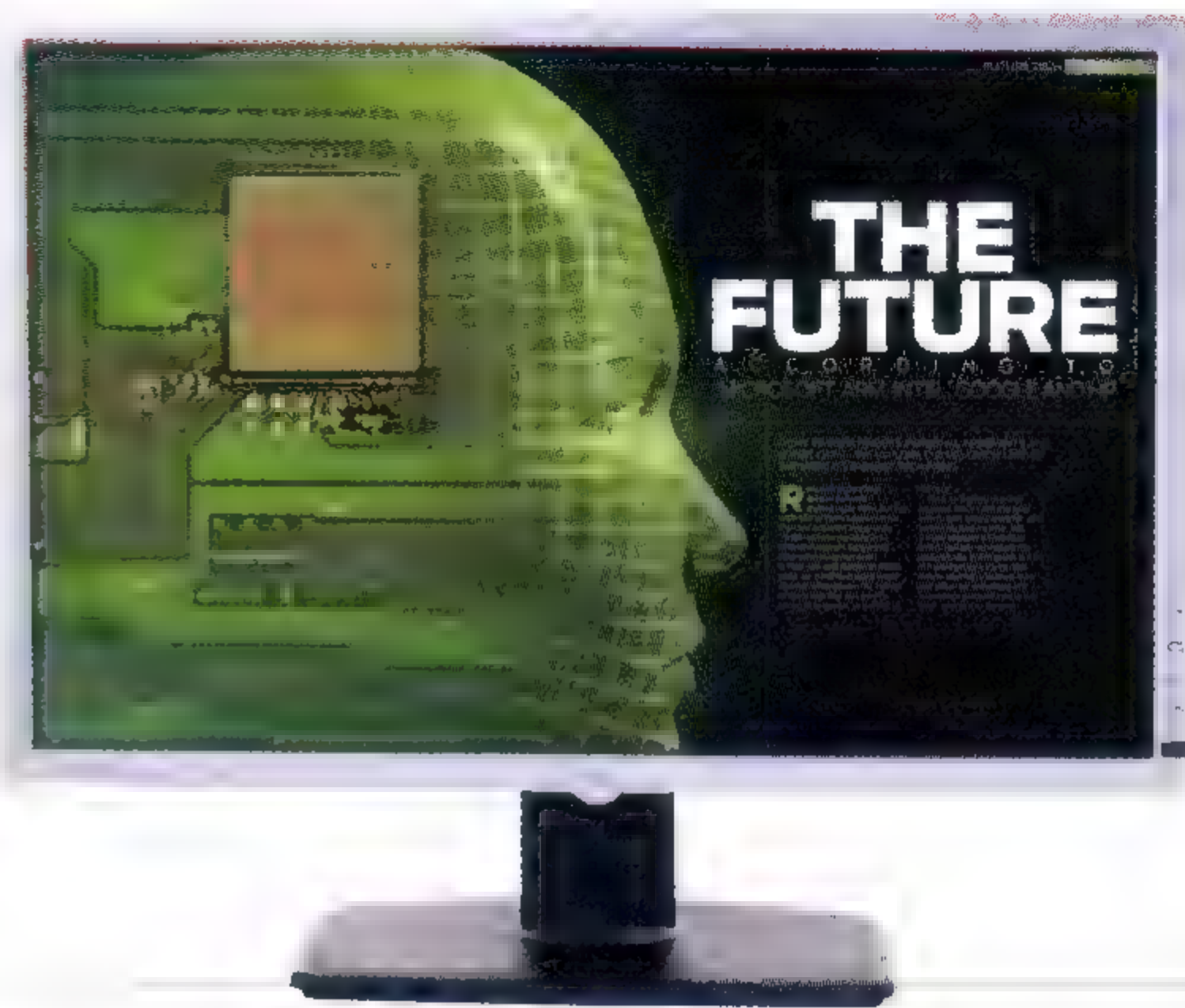
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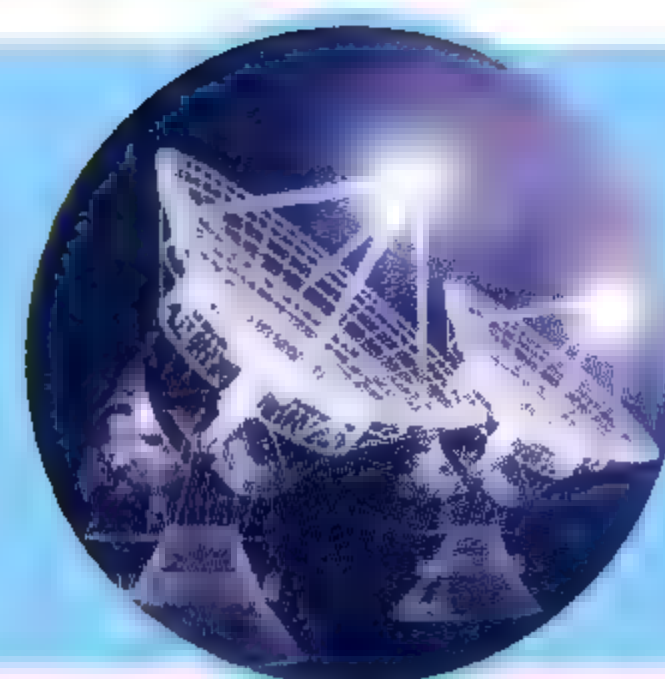
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HOW TO

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## HOW TO:

# Stay secure online with a password manager

SAVE YOURSELF FROM REMEMBERING DOZENS OF PASSWORDS. **DAVEY WINDER** EXPLAINS WHY YOU SHOULD PLACE YOUR FAITH IN PASSWORD MANAGERS

**W**hen an online service suffers a data breach – as recently happened to eHarmony, LinkedIn and Yahoo – there's a risk that an intruder will discover your password and gain access to your account. That danger is multiplied if the compromised password has been used across multiple sites. What has been most shocking about some of the data breaches in recent years is that quite often the level of security used by companies to protect such data is sorely lacking

Passwords present an online dilemma; seemingly every service you use online requires a password, and for those passwords to be secure, they have to be complex. However, unless you're blessed with savant levels of memory, it's impossible to remember half a dozen mixed-case, alphanumeric, special-character inclusive, lengthy random keys – so it's no surprise that people resort to reusing passwords.

This is where password managers come in – they do the remembering for you. But how do you pick the right one? What questions should you ask of such applications, and is such an approach actually secure?

### HOW SAFE ARE PASSWORD VAULTS?

It's been argued that using a password manager is "putting all your security eggs in one basket" – and with good reason: if you keep all your login data in one place, then any hacker successful in compromising it has been handed the keys to your online kingdom. At first glance, this may seem like an instant deal breaker. From a risk perspective, it requires a breach of only one service to have a domino effect on every other service you use.

Yet the actual risk of compromise is far less than if you reuse one password across multiple sites. In this scenario, you're relying on



dozens of sites keeping your data safe. It takes only one of them to suffer a breach and all the others are compromised as a result. Regular readers of *PC & Tech Authority* will be only too aware of how many popular internet services have suffered breaches over the past couple of years, with password

**The risk of using a cloud service to save passwords isn't as great as it may seem**

databases being high on the list.

Meanwhile, the major players in the password manager sector haven't suffered any breaches – with one notable exception. Certainly, there's been no successful compromise of encrypted password hashes. Even the one exception, when LastPass security was possibly

breached at the start of 2011, seems not to have caused catastrophic damage. LastPass noticed a traffic anomaly, rather than the theft of any data, and reacted immediately by forcing all users to change master passwords before their stored information could be accessed. For extra security, the change was required to be from a known IP address or confirmed with email validation. Even if password hash files were downloaded (and it isn't clear that this was the case), as long as those users had followed the recommended advice regarding master password strength and complexity, their password vaults remained safe.

### PASSWORDS IN THE CLOUD

If you're a typical *PC & Tech Authority* reader then you probably



access the internet on a number of different devices running various operating systems during the course of a day. If your password vault sits at home on your Windows desktop, but you have access to only an iOS device at the time, then you're going to be in trouble. A password manager that keeps your passwords "in the cloud" gives you the convenience of accessing your passwords from any device, anywhere, at any time – but it means the actual database file isn't under your direct control. A local store on your laptop or a removable USB drive is less of a target to hackers than a centralised cloud password store.

The risk of using a cloud service isn't as great as it may seem. Services such as LastPass use SSL for data transfer, in addition to your data being encrypted with 256-bit AES, and have a policy of not receiving private data that isn't already locked down with your master password (which is never known to the company). By using local encryption and decryption on your PC, with locally created one-way salted hashes, and making brute-forcing of master passwords all but impossible by utilising a large number of PBKDF2-SHA256 iterations to create them, the number of attack vectors is reduced considerably.

The bigger question is what happens if a cloud service is unavailable – or, worse still, if the provider goes bust? Keeping an

## PASSWORD MANAGER TIPS

**1** Password manager software keeps "all your eggs in one basket", so ensure that your chosen application allows you to make backups of your password database – in a secure fashion, with the backup data remaining encrypted.

**2** It may seem desirable to be able to recover your master password from the application vendor, should you forget it, but making this possible would introduce a number of weaknesses into the security equation. First, how could you satisfactorily prove that you were the person asking for the data recovery and not just someone with access to your device? Second, if the vendor knows your master password then a rogue employee could use it to access your password vault. And if the vendor can decrypt and access your database, hackers could do the same. Removing this possibility keeps you much safer from intruders, and also prevents law-enforcement from successfully demanding the keys.

**3** Essentially, password managers are just big notebooks (albeit super-secure ones),

so it's essential to think about the risk of others taking a sneaky peek at them. Always delve into the configuration options and reduce the shutdown time-out to as short a period as possible. Defaults can vary from minutes to a couple of hours, leaving way too much opportunity for a screen to be readable while you're away from your device. This becomes particularly relevant with mobile devices such as smartphones or tablets. Always opt for the minimum time-out and, if possible, set your software to automatically lock the vault when switching between applications or going into any kind of sleep mode.

**4** Some password managers will make it easy to migrate from a competitor: for example, LastPass has import routines for many file formats covering the big players in the field, and RoboForm will happily import from LastPass. However, some of these processes rely on the use of easily readable CSV files, which introduces an obvious element of risk. Whichever export process you use, make sure you completely delete these files once they've been imported using a secure file-deletion tool.

off-site backup of your password database, encrypted with an application such as TrueCrypt, answers the latter half of the question, but it won't help you when you need access to a site or service and are stranded in the field without your password.

Local clients, with your encrypted database stored on the device from

which you're accessing them, aren't reliant on third-party balance sheets or network connectivity. Even if the vendor goes out of business, you have the application installed and it still works. Such clients work on only the devices supported by the vendor, but 1Password supports Mac, Windows, iOS and Android platforms, while the open source KeePass has ports available for Linux, Windows Phone, BlackBerry and even PalmOS – in addition to the usual OS suspects.

So what happens if you lose the phone that stores your local client password manager, or your laptop dies?

This isn't a problem if you keep an encrypted backup somewhere else, or if you have the same database on multiple devices. By using 1Password, for example, you can sync your encrypted password database to Dropbox; from there, it will sync with any device running another instance of the local client. Since the password database itself is strongly encrypted before it arrives at Dropbox, even if Dropbox should itself suffer a breach, the risk of exposure is minimal. These hybrid password solutions combine the best of both worlds: the security of local storage and the convenience of the cloud. They remove the risk associated with a single point of failure.

▼ A complex password should be easy to recall, but very difficult to brute force

### GRC's Interactive Brute Force Password "Search Space" Calculator (NOTHING you ever leaves your browser. What happens here, stays here.)

3 Uppercase 15 Lowercase 5 Digits 2 Symbols 25 Characters

**?myKar10442isaPokitRokit?**

Enter and edit your test passwords in the field above while viewing the analysis below.

#### Brute Force Search Space Analysis:

Search Space Depth (Alphabet):	26+26+10+33 = 95
Search Space Length (Characters):	25 characters
Exact Search Space Size (Count): (count of all possible passwords with this alphabet size and up to this password's length)	28,034,052,602,738,549,436,590,497,089,977,609,984,418,179,126,495
Search Space Size (as a power of 10):	2.80 x 10 <sup>49</sup>

#### Time Required to Exhaustively Search this Password's Space:

Online Attack Scenario: (Assuming one thousand guesses per second)	8.91 trillion trillion trillion centuries
Offline Fast Attack Scenario: (Assuming one hundred billion guesses per second)	89.14 thousand trillion trillion centuries
Massive Cracking Array Scenario: (Assuming one hundred trillion guesses per second)	89.14 trillion trillion centuries

Note that typical attacks will be online password guessing limited to, at most, a few hundred guesses per second.



## MASTER PASSWORD SECURITY

Many password manager applications combine two features that make for strong protection - namely, the ability to generate random and complex password strings, and the ability to automatically log the user into the service or site using those passwords.

Since you don't have to remember each random string, each password can be as long and complex as you like, which adds greatly to the security of your access. And if the login process is being handled by the application then you don't even have to know what the password is in the first place.

The one password that needs to be long, strong and complex, but very much known to you, is the master password; it acts as the encryption key to lock away all the others. A password manager is only ever as secure as this master password, so it needs to be a good one.

The idea of having to memorise a complex password that's at least 12 characters long, which includes both cases, both numbers and letters, and some special keyboard characters for good measure, sounds much worse than the reality. I use a master passphrase of more than 15 characters and change it every three months, yet have never once forgotten it.

The key, if you'll excuse the pun, is to abandon the truly random approach here and go for something you'll remember - but in a format that makes it difficult for a human to make a guess or a machine to

## THE LASTPASS SECURITY CHALLENGE

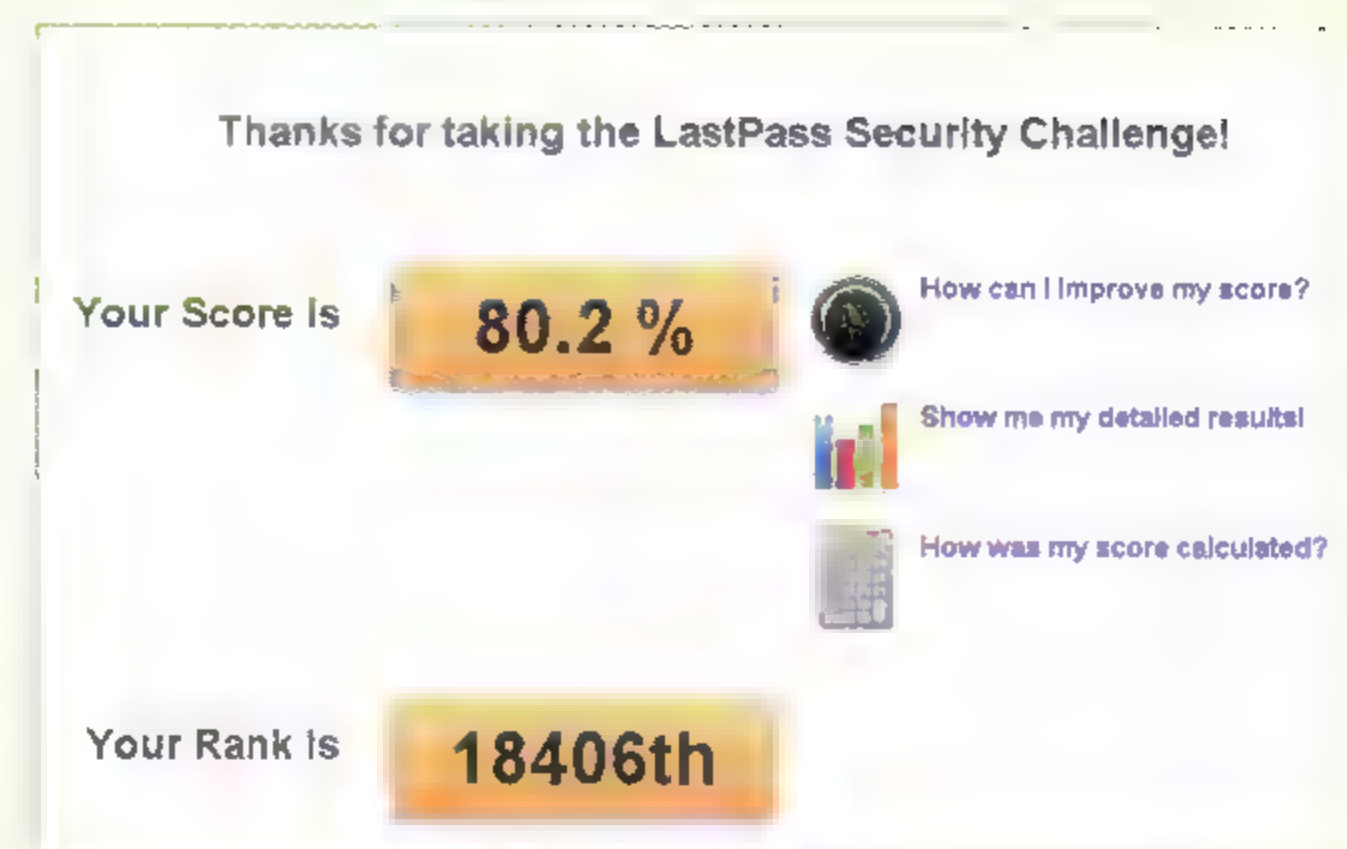
All password manager software should generate complex passwords. You should ensure that it allows you to specify the overall password length, the number of digits and special characters to be included, and whether duplicates are allowed - and it should provide an indicator of the resulting password strength as well. You can then easily use the password generator function to replace your existing site passwords with much stronger ones.

To help with your overall security, LastPass offers its "Security Challenge". This feature analyses your overall password security by checking for identical passwords used across multiple domains, guessable passwords and those vulnerable to dictionary attack. It will also take into account whether or not you use multifactor authentication to access LastPass, and audit the total number of logins you store

use brute force. You can combine words, with mixed cases and special characters in-between, throw in a few numbers and still have something that's memorable but almost uncrackable. For example,

**The one password that needs to be long, strong and complex is the master password**

the easily recalled phrase "my car is a pocket rocket" could be turned into a strong passphrase with the use of some misspelling and capitalisation, the addition of the numerals from your number plate and a couple of question marks to make it



▲ LastPass' Security Challenge feature puts your chosen passwords under scrutiny

in the software, on the basis that a small number of passwords in your vault implies more that haven't been moved there yet. Once your overall security has been analysed, the checker gives you a score, and provides a breakdown of areas where it can be improved.

"?myKar13isaPokitRokit?"

If the master password is your key to password file security, then encryption is the lock that protects that file. LastPass and 1Password, for example, encrypt your data locally on your device using the master password, so that any data that you store online in the cloud is already encrypted before it arrives.

## SECURITY MATTERS

It's a given when choosing a secure password manager that it should use a high level of data encryption. In practical terms, this means a minimum of 256-bit Advanced Encryption Standard (AES) or equivalent algorithm. One common myth, which we touched on earlier, is that your passwords become vulnerable as soon as they're stored in the cloud. The truth is that as long as your password data files are encrypted and protected by a secure master password - one that isn't written down or reused elsewhere - then your passwords are safe even

▼ Don't forget your master password: if the vendor is following secure practices, it won't be able to tell you what it is

**LastPass** \*\*\*\*

Please re-enter your password to confirm you entered it correctly.

Your LastPass Master Password .....

**IT IS CRITICAL THAT YOU NEVER FORGET YOUR LASTPASS PASSWORD.**

To protect your privacy and keep your data confidential, we DO NOT know what your LastPass password is. We also DO NOT keep a copy or backup of it.

But I'm a forgetful person...what should I do if I forget my password?

If you do end up forgetting your LastPass master password, contact us and we will email you your password reminder. Your password reminder serves to remind you of what your actual password is, while still maintaining its secrecy.

Save Cancel

▼ Many programs will automatically generate extremely secure passwords for you

Generate Password

67i7mt7M6>yneE#BwP

Strength: Fantastic Copy

Length: 18

▼ Advanced Options

Digits: Symbols:

☒ Avoid ambiguous characters ☐ Allow characters to repeat

OK Cancel



when stored online. In order to compromise them, an attacker would first have to compromise the password service, then crack the encryption protecting your password file. It really isn't any more risky than if the password file were stored locally, as your laptop or USB drive could always be stolen; it's the encryption that's important.

## Some programs support the use of hardware two-factor authentication tokens

For the truly paranoid it's possible to strengthen your password vault further. Some password managers – RoboForm and LastPass Premium, for example – allow for the use of biometrics, by way of a fingerprint reader, to replace the master password for access. Both LastPass (Premium) and KeePass support the use of YubiKey hardware two-factor authentication tokens. These can be purchased cheaply online, and provide a time-variant secure login code when the button on the USB stick is pressed, by simulating a USB keyboard. This 128-bit code is unique every time the device is used and, as such, can't be copied and reused. It is basic security logic that adding a requirement for something you physically have (the YubiKey token) to something you know (your master password) considerably strengthens the access security to your password vault.

Password managers aren't a magic bullet against those who would steal your data, and shouldn't be regarded as a replacement for other essentials such as security software and large doses of common sense. The autofill function of a password manager can make it harder for malware to capture live login data (a keylogger will fail, since no keystrokes are being made), but it doesn't make it impossible; a man-in-the-middle attack could still compromise your security once you've logged in.

All the same, software that makes it practical to use regularly changed, truly random and complex passwords is an incredibly powerful security tool – and one that's increasingly becoming essential. ●

## PASSWORD MANAGERS: THE BIG FOUR

### LASTPASS

[www.lastpass.com](http://www.lastpass.com)

LastPass doesn't adopt the local client approach, but relies on an access-anywhere, server-based storage model. The free version provides the basic functionality you'd expect, including one-click login, automatic form-filling, cross-browser synchronisation, secure import/export, encrypted backup and restore, secure password generation and a security checkup that analyses the strength of your passwords. Pay \$US 12 per year for the Premium edition of LastPass and it starts getting even more serious about functionality, adding support for mobile platforms including iOS, BlackBerry, Android, Windows Phone, Symbian and even webOS. Plus, Premium users receive two-factor authentication support for YubiKeys and USB drives. LastPass suffered from some negative media coverage over a potential security breach early in 2011, but its response was pretty positive, and new security features now provide even better protection.

### ROBOFORM

[www.roboform.com](http://www.roboform.com)

RoboForm has been protecting passwords since 1999, and offers one of the most flexible vault services around. It's available in a limited-functionality, free version, providing an encrypted password store for ten logins and an auto-fill function. You'll need the Desktop 7 version (costing \$US 29.95) for unlimited logins and multiple profiles on a single PC. The real flexibility comes from adding RoboForm Everywhere for Windows, Mac and mobile into the mix. This offers cloud-based synchronisation across mobile devices, but at a further cost – currently \$US 9.95 for the initial one-year licence, after which it increases to \$US 19.95 per year. You also receive multiple encryption profiles from which to choose, a secure password generator, the ability to import data from other vaults, and support for USB memory sticks.

### KEEPASS

[www.keepass.com](http://www.keepass.com)

KeePass takes an open source approach to password managers and, as such, is often touted as the vault of choice for the sysadmin or advanced users. While the number of advanced tweaking options makes it suited to enterprise use, it's also straightforward for consumers – and it's free. There's 256-bit AES encryption of the entire database, along with SHA-256 hashing of the master password for security, with the usual array of password generation and login completion that you'd expect. Primarily a local client, with your passwords stored on your device, KeePass supports Dropbox for cloud synchronisation too. Like LastPass, KeePass supports the use of YubiKeys for two-factor authentication, but there's no premium to pay for this additional security measure. There are good import and export options, plus a staggering number of supported platforms, including Linux. Since it's open source, there are also myriad third-party plugins available to extend functionality.

### 1PASSWORD

[www.agilebits.com/onepassword](http://www.agilebits.com/onepassword)

1Password started life within the Mac marketplace, but has extended to embrace iOS and Android devices, and the Windows desktop. It's another hybrid local/cloud client, offering a client installed on each device along with an encrypted password database – but with the option to synchronise these in the cloud via Dropbox. Only the Android version is free. Other than a 30-day trial, you have to pay for 1Password, and for full flexibility you need to purchase a client for each device, costing \$US 49.99 for Windows or Mac, and \$US 17.99 for a universal iPhone and iPad app. Decent import options, a secure password generator and the ability to store more than login data (such as software licence keys, notes and credit card details) are coupled with strong encryption and a UI, which varies according to platform, but is consistently attractive and intuitive.







## HOW TO: Navigating through the radio soup

PAUL OCKENDEN EXPLORES THE WONDERFUL WORLD OF WIRELESS SIGNALS.

**L**isten very carefully. Can you hear that noise? Can you hear the radio? No, I don't mean the FM radio booming from the car driving past, nor the mediocre sound of digital radio wafting from the kitchen. I'm talking about all of the other radio signals buzzing around your head. Of course you can't hear them - not if you're mentally stable, anyway, which I prefer to assume you are. You can't even hear "normal" radio without some kind of receiver. The right apparatus allows you to watch and listen to broadcast stations, and exactly the same is true for all of the other wireless signals in the air - you need the right equipment to pick them up.

In order of increasing frequency, the electromagnetic spectrum is as follows: radio, microwaves, infrared, visible light, ultra-violet, X-rays, gamma rays. My old physics teacher taught me a good way to remember this - Rabbits Mate In Very Unusual eXpensive Gardens. I say good way, but whenever I try to remember this I'm never sure whether it's "very unusual expensive

gardens" or "very expensive unusual gardens". Perhaps I've spent too much time visiting Heritage-listed gardens.

It's the radio part that we're really interested in, and that's generally accepted as running from 3kHz through to 300GHz, although the International Telecommunications Union (ITU) - the UN agency responsible for information and communication technologies - splits this space into 12 bands stretching all the way up to 3THz (or 3000GHz). Each band is an extra zero wide (so 3kHz-30kHz, 300MHz-3GHz, and so on), which is simple enough. These bands are further subdivided, and in Australia are managed by the Australian Communications and Media Authority (ACMA), which ultimately defines who and what can use each bit of the wireless spectrum.

The first three ITU-defined bands - ELF, SLF and ULF (for extremely, super and ultra low frequency) - can be mostly ignored, as they're mainly generated by natural phenomena such as lightning and earthquakes. ELF has been used for submarine

communications because the signal penetrates a fair distance through salt water: it can take hours to send a simple message - we'll see why in a moment - but it's delivered to boats operating hundreds of metres below the surface. The logistics are complex, since the wavelength will typically be around a tenth of the circumference of the planet! Obviously, nobody is going to build an antenna that big (nor even a quarter-wave dipole), so instead these systems use parts of the Earth itself as the antenna. Huge poles are sunk tens of miles apart in areas of low ground conductivity, so that the current penetrates deep into the Earth. It's mind-boggling engineering, and only the Americans and Russians have ever built such systems (Britain once planned one in Scotland, but it was abandoned). Since the transmitters required are so huge, it's a one-way system - there's no way submarines can transmit back.

The first band you might think of as normal "radio" is VLF (band 4, very low frequency, 3-30kHz), which has such a low frequency it can't be used for voice communications, since the carrier wave frequency must always be higher than any signal you need it to carry - regardless of whether modulation is by amplitude (AM), frequency (FM), or whether you're dealing with analogue or digital signals (it is possible to bend the rules slightly by compressing digital data before transmission, however). As a result VLF is only really usable for slow, low-bandwidth data transmission.

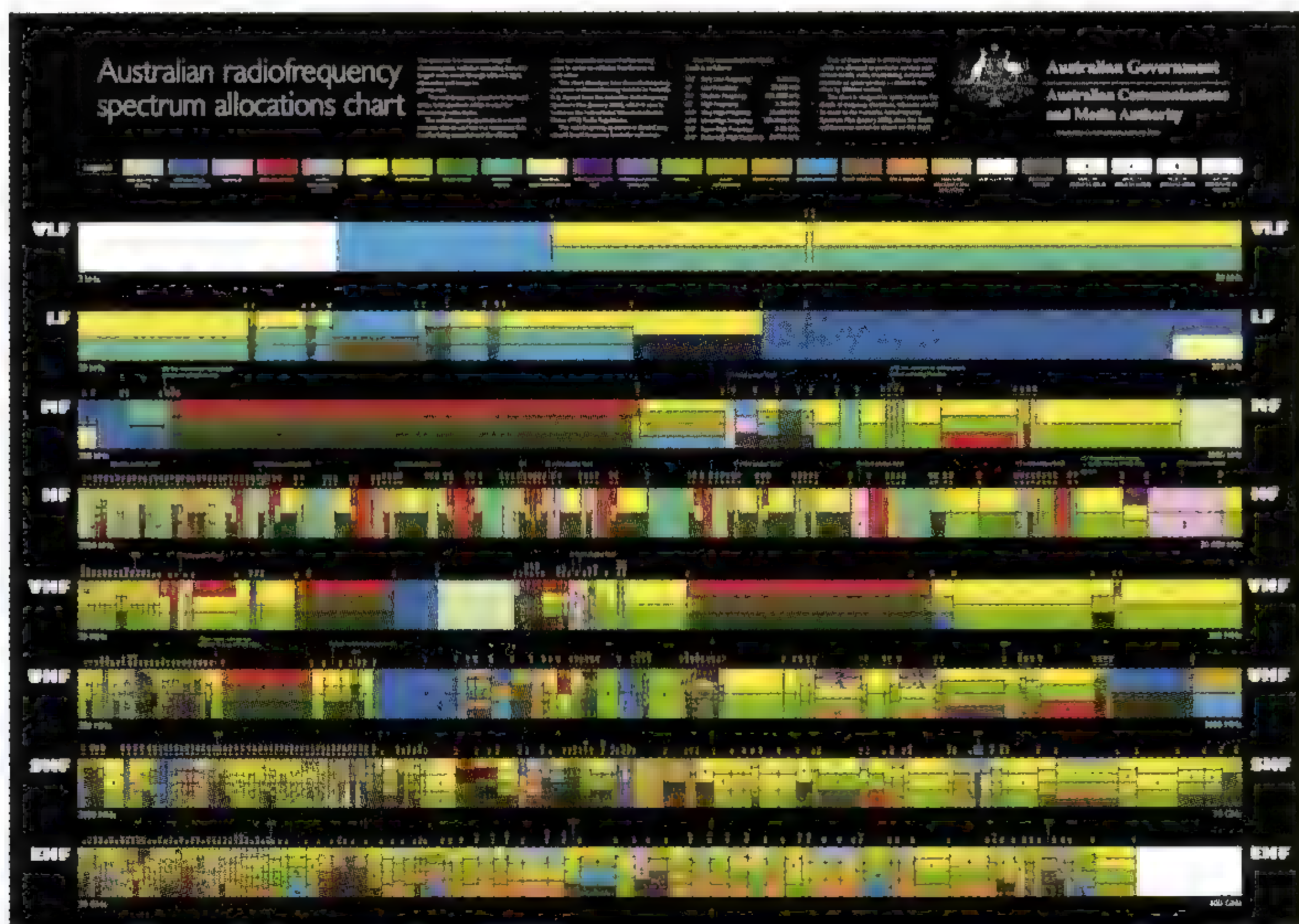
Next comes LF (band 5, low frequency, 30-300kHz), whose main use is for aircraft beacons and weather systems, although the good old long wave, which sits at the top end of this band, will be familiar to those who follow cricket matches or

**While UHF is the band for now, SHF is set to be the band of the future for data comms**

church services. Remember that low frequency and long wavelength go together: as one number goes down the other goes up. Visualise some kids making standing waves in a skipping rope: the faster they wiggle their hands (higher frequency) the more wiggles they can fit in, so the peaks are closer together (shorter wavelength).

MF (band 6, medium frequency, 300kHz-3MHz) comes next, and its major use is for the medium wave radio service. MF also contains the 160m amateur radio band, and there are also a few navigation and global





distress beacon applications. Next comes HF (band 7, high frequency, 3-30MHz), which many people think of as "shortwave" radio. Both broadcast radio stations and amateurs use this band, as well as military and aircraft-to-ground communications. Due to the way HF propagates - by reflecting or, more accurately, refracting off the ionosphere and bouncing back to Earth - this band is also used in over-the-horizon radars. The crude resolution of such radar makes it useless for targeting, but it still beats modern satellite wizardry for defence early warning systems.

After HF comes VHF (band 8, very high frequency, 30-300MHz), which is employed for FM radio, amateur radio, air-traffic control and instrument landing systems. Australia uses some VHF bands for TV broadcast, as it is more suitable than UHF in regional areas, while in places like Europe VHF television broadcast has been phased out in favour of digital radio (DAB). That TV and DAB appear here shows we're entering the part of the spectrum best suited to data communication, the so-called "digital sweetspot".

A major chunk of that sweetspot is occupied by UHF (band 9, ultra-high frequency, 300MHz-3GHz). It's there we find current digital TV broadcasts, mobile phone signals (GSM, 3G and most of the 4G flavours), good old-fashioned Wi-Fi, DECT cordless phones, Bluetooth, wireless sensors for equipment such as weather stations and energy monitors, plus a few amateur radio bands. We start to encroach on the microwave spectrum at the top end of this band. Most of the signals crammed into this very crowded spectrum are digital nowadays, which enables much more stuff to be packed into the available bandwidth.

All the kit I write about in this column - phones, Wi-Fi and so on - operates within the UHF band, but having come this far I might as well complete the trip; next is the SHF (ITU band 10, super-high frequency, 3-30GHz) band. Here we find 5GHz

**RF Explorer is great for seeing what signals are out there, but there's much more it can do**

Wi-Fi and satellite TV downlink signals. Almost all modern radar systems employ SHF, and a massive chunk (almost a third) of the band will be used by wireless USB as it becomes more widespread. This band is great for directional, short-range data communication, and recent developments in microwave integrated circuits mean the signal processing can now happen directly in silicon, rather than a processed signal having to be mixed with a high-frequency carrier. So while UHF is the band for now, SHF looks set to be the band of the future, with more and more of our data signalling moving into this spectrum.

The last but one of the official ITU bands - and the last really usable one - is EHF (band 11, extremely high frequency, 30-300GHz) with wavelengths between one and ten millimetres. Such signals suffer extreme attenuation by the atmosphere, so the band isn't suitable for long-range communication. The attenuation is caused because these signals stimulate the resonant frequencies of particular atmospheric molecules - oxygen, for example, has a huge absorption peak at around 60GHz - although that does mean

There are a phenomenal number of channels in use, as this chart of the Australian frequencies shows

that windows exist in the attenuation spectrum where no molecular culprit lives.

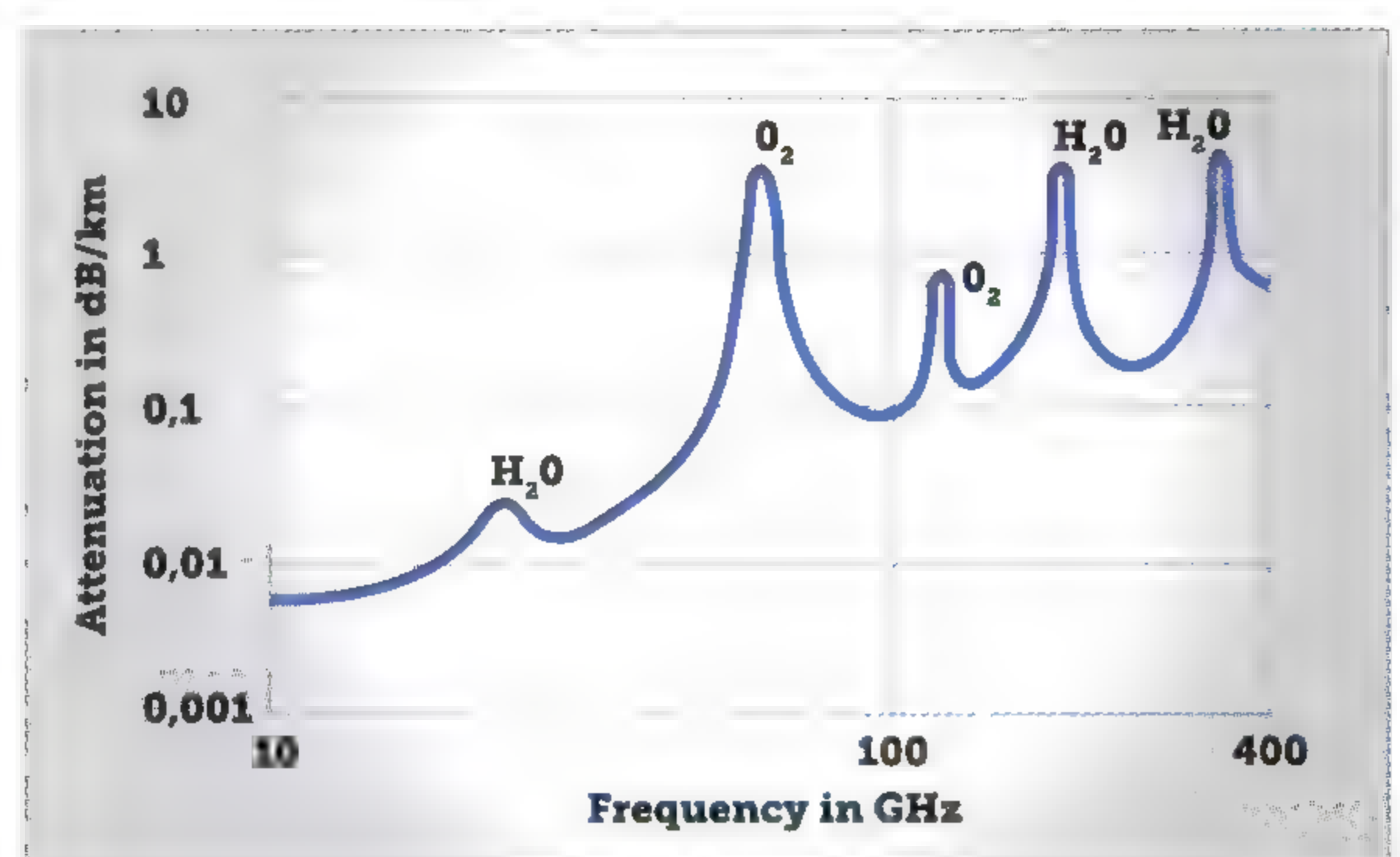
The upcoming Wi-Fi standard 802.11ad is actually designed to work at 60GHz, because oxygen absorption isn't too much of a problem over LAN-scale distances, and in fact becomes a benefit in that it means 60GHz can be used only for short-distance links and you don't need to worry about interference at longer ranges (at least not for terrestrial applications). That in turn means the same frequencies can be safely re-used nearby, and some countries allow unlicensed use of 60GHz.

Move slightly away from the oxygen absorption peak and the attenuation quickly drops off, and such frequencies are starting to be deployed for very-high-bandwidth communication links. The high frequency means you can pack in much more data than you could with a longer wavelength carrier. Those famous airport scanners that can see through your clothes also work in the EHF band, but more worrying than that is a reported use of this band as a weapon.

The US military is alleged to have a weapon that fires a high-power, directional beam of 3mm radiation, which is reported to cause an extremely painful burning sensation - as if the victim were on fire - even though no physical damage is caused. I used to work in the defence industry (defence is really a euphemism for offence), and I find such stuff very offensive. No physical damage, perhaps, but imagine the long-term psychological damage if you'd been subjected to it.

Finally, we arrive at THF (ITU band 12, tremendously high frequency, 300GHz-3THz), which is almost into the light spectrum since THF sits just below infrared. This band is used mostly for medical imaging, and although there has been a proof of concept experiment to transmit data at these frequencies, real-world applications are decades away.

In the EHF band, we start to see molecular absorption







# SYSTEM BUILDER:

## The cheap way to recover deleted files

**JOHN GILLOOLY** GOT A BIT ENTHUSIASTIC WITH SHIFT + DELETE AND ENDED UP GETTING THEM BACK WITHOUT SPENDING ANYTHING

**N**o matter how easy the process of backing up data is, and how many times the importance of keeping good backups is stressed, we have all suffered the experience of lost data. Sometimes it is down to something as simple as careless deletion or reformatting, other times it comes alongside that sinking feeling that a drive has died for good.

Getting lost data back can range from being a relatively quick and easy procedure, all the way through to costing more than your PC itself, as professionals carefully dismantle the drive and use fancy techniques to access what remains on the platters. Given that a hard disk is a complex mechanical beast, if it is physically damaged you'll end up resorting to the latter, or making peace with the fact that your data is gone for good.

If your hard drive is physically fine though, there are several things you can do to try and get your data back through software. However, this can also be a costly procedure, involving the purchase of a custom suite designed to dig through your hard disk and recover

fragments of lost files. As you'll likely be aware, when one deletes a file from a PC, it doesn't actually get removed from the disk – instead, the reference to its location is forgotten by your file system. Even if you reformat a drive, a similar process occurs, and your data will sit, invisible, until it is written over by new information.

This doesn't apply to SSDs, due to the use of technologies like TRIM and Garbage Collection. These are used to stop the performance of an SSD degrading over time due to the nature of Flash Memory. When you erase the reference to a file on an SSD the data is still there, like a hard disk. However when you go to write new data to that

**When one deletes a file from a PC it doesn't actually get removed**

section, the flash memory first has to be erased, and then written over. This process slows down the SSD, which led to the creation of the TRIM command. This is sent to the SSD by a supported operating system during idle times, and tells the drive to go ahead and erase the data from the flash memory marked as empty. While this has been crucial to the viability of the SSD as a storage device, it makes recovering data that much trickier.

It is important to note that, while this applies to SSDs, it doesn't apply to other flash storage devices like USB sticks and SD cards. That means these are similar to hard disks when it comes to recovering data, and accidental deletion or formatting can be undone.

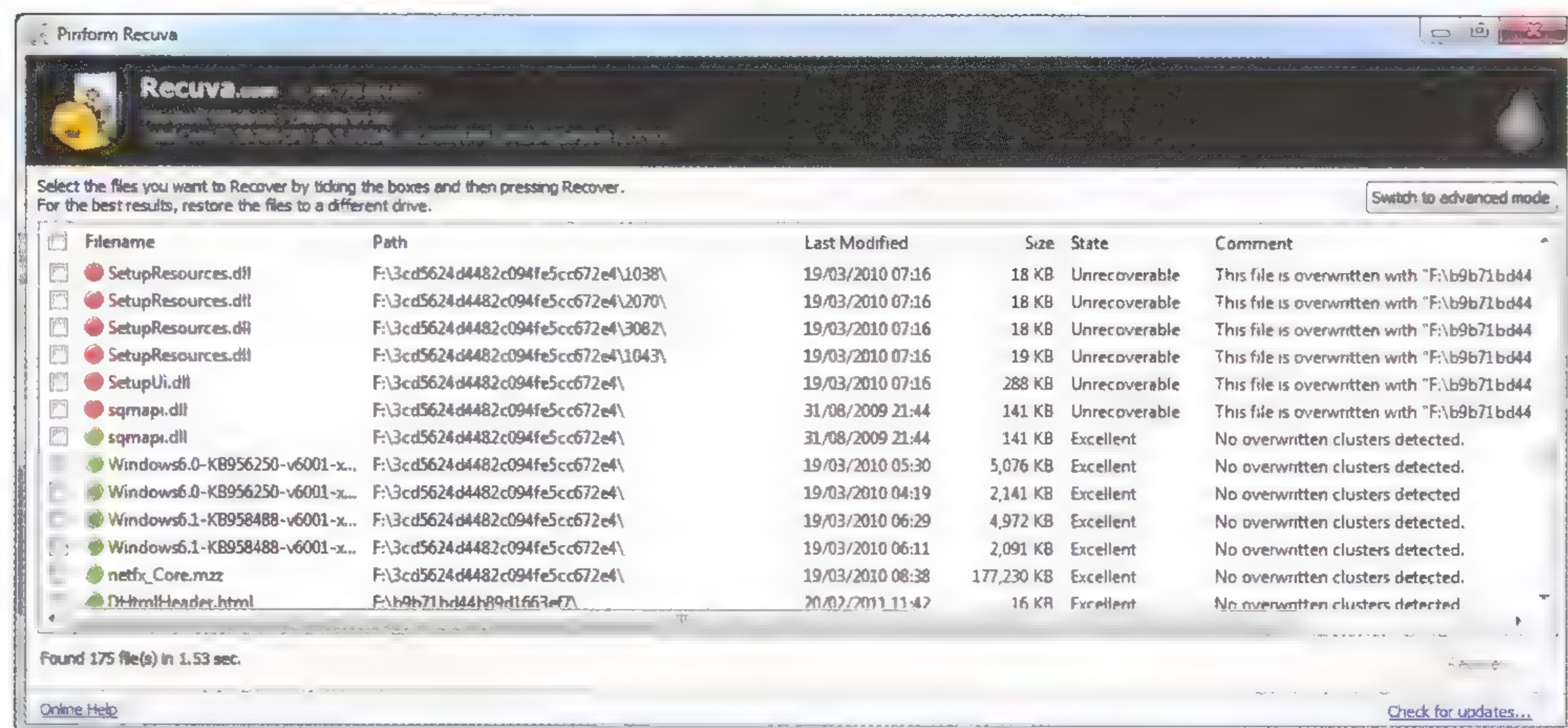
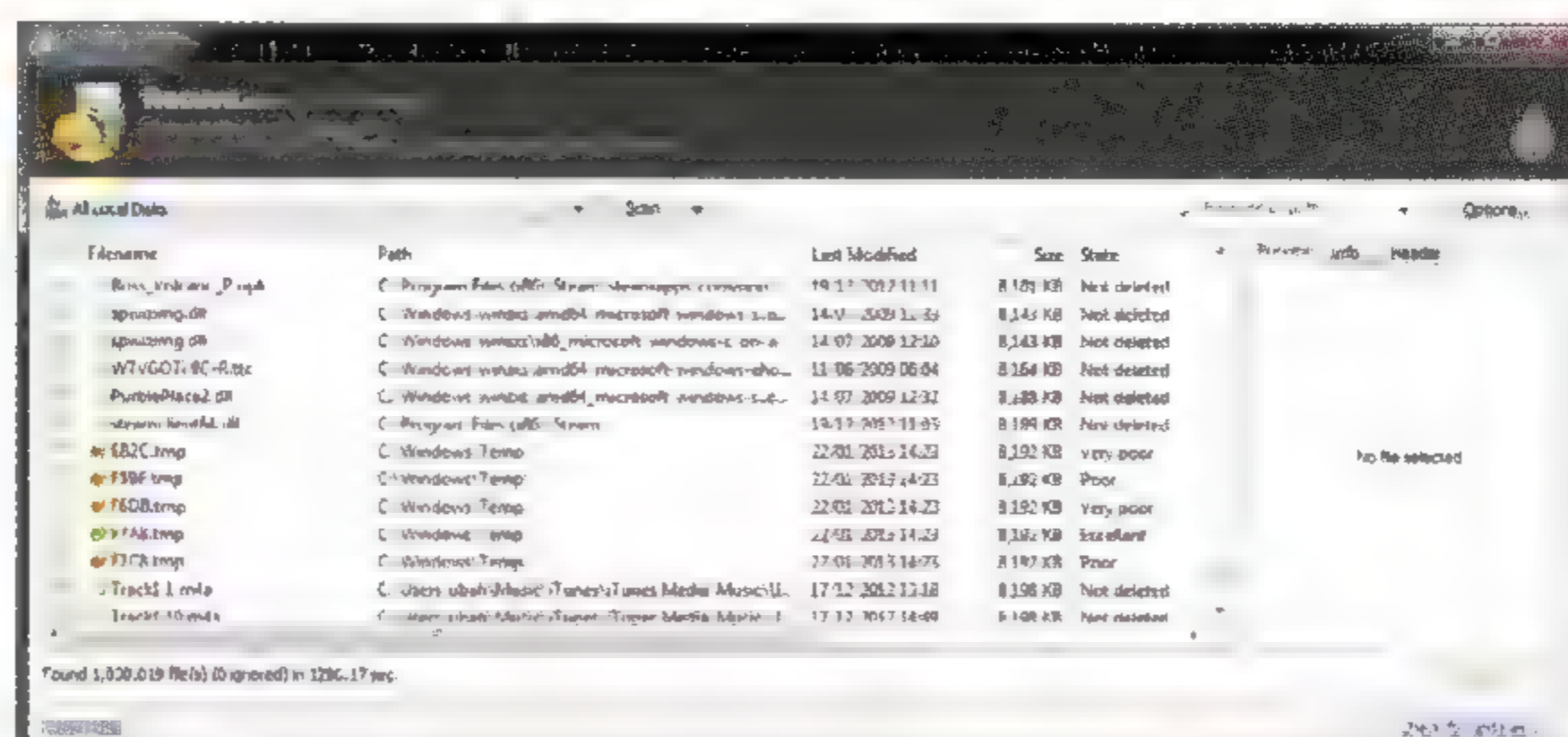
### THE EASY, AND FREE, FIRST STEP IN DATA RECOVERY

A recent reformatting-without-thinking episode had us searching around for suitable undelete tools online, and stumbling through a minefield of 'free' software that would find files and show us their existence, then instruct us to buy a full version to recover them. Other tools would let us grab files under 1MB, but have to commit to a full version to let us get our hands on bigger ones.

Given that such an incident will never happen again because of certain

◀ Recuva will let you know if a file is recoverable, or if it has been overwritten.

▼ Most of the files found end up being irrelevant, but your lost data may lie among them



**ThermalTake**  
COOL IT - YOUR LIFE

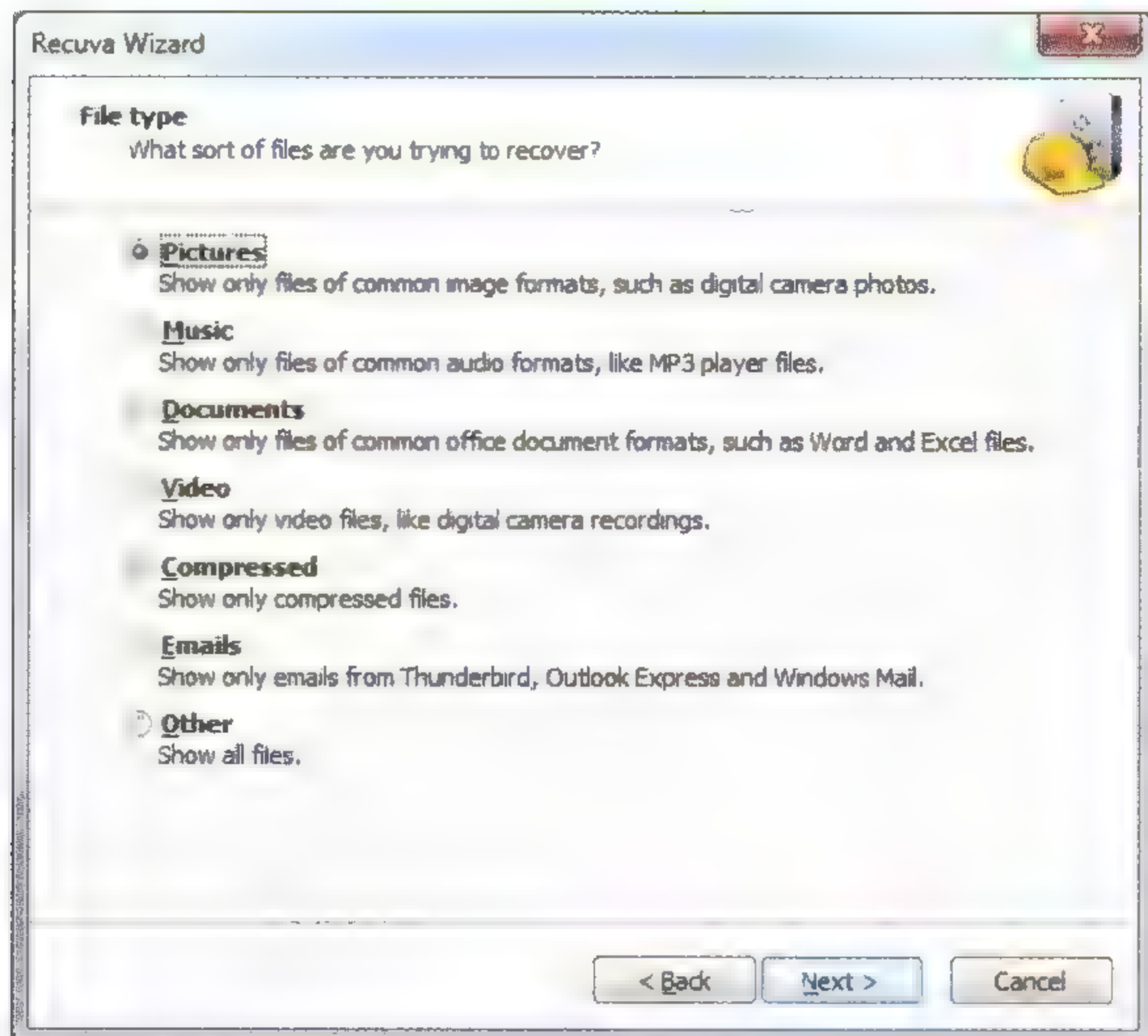
**Toughpower XT**  
Power Supply



Life-time Warranty

Available in:  
675W, 775W, & 875W





lessons learned about regular backups, we didn't want to drop a chunk of cash on software. Thankfully there are a few free options that are a good first port of call to see if you can get your data back before buying one of the more featured software packages.

The two we found most useful are Photorec and Recuva. Photorec is an open source offering that started life as a tool to grab lost images from SD cards, and has evolved to work with a wide array of filetypes. The downside for some is that it uses a text-based interface, which can be a bit daunting for most users, and you'll want a degree of knowledge about your file systems to make it work.

## RECUVA, THE EASY OPTION

Recuva (<http://www.piriform.com/recuva>), on the other hand, is the free version of a commercial suite from Piriform, which also makes the very handy CCleaner program.

We'd suggest Recuva as the first port of call, if only because it is wrapped in an easy to understand and user friendly Wizard interface. Fire it up and you'll be presented with a list of file types, enabling you to just search for pictures, video, documents and the like. You can also choose to show all detected files, and make the decision on which ones to grab once the search is finished. It then presents you with a list of locations to search, handy if you know where the file once was. Otherwise you can choose to search everywhere on your PC. (Due to the nature of the software it doesn't work

▲ For non-power users this Wizard can help you streamline your searches

with CDs and floppy drives, but it does work with USB sticks and SD cards.)

The final option you are presented with is that of a deep scan, which is a good second step if the initial search doesn't find the files you are after. This will uncover files lost during a reformat - the downside is that the search will take quite some time to run as it digs through your entire drive. The results will then show you which files it has located, and whether they can possibly be recovered. It will also handily point out if a file has been overwritten since deletion - if this is the case, then it is gone for good, but you will at least have confirmation that you don't need more complex software.

From this window you can select which files you wish to recover. It is a sortable window, which makes it easy to find the larger files, sort by folder (if the folder they were in has been deleted it will be denoted by a drive letter and question mark) or find files by the date modified. Once you have ticked the checkbox on the files you want back, then hit the recover button, and select the destination to put the recovered files. It is best to put it onto a separate drive during the recovery (you

can always copy it back later, but you don't want to overwrite the files you are trying to undelete) - if your system only has one hard drive, then use a USB stick to be safe.

## NEXT PORT OF CALL

If this initial search proves fruitless then you can move on to advanced mode, where you'll find a bunch of extra options to enable. In the options popout, under actions, you can set these parameters. Enabling 'show zero byte files' is a handy choice if you want to know if your deleted file is gone for good - it at least lets you know that the file is unrecoverable. This window also allows you to enable deep scanning and a very handy option to search for files lost during a reformat or due to drive damage.

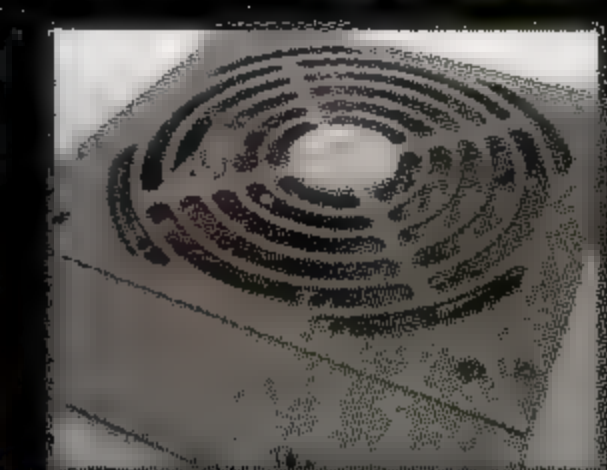
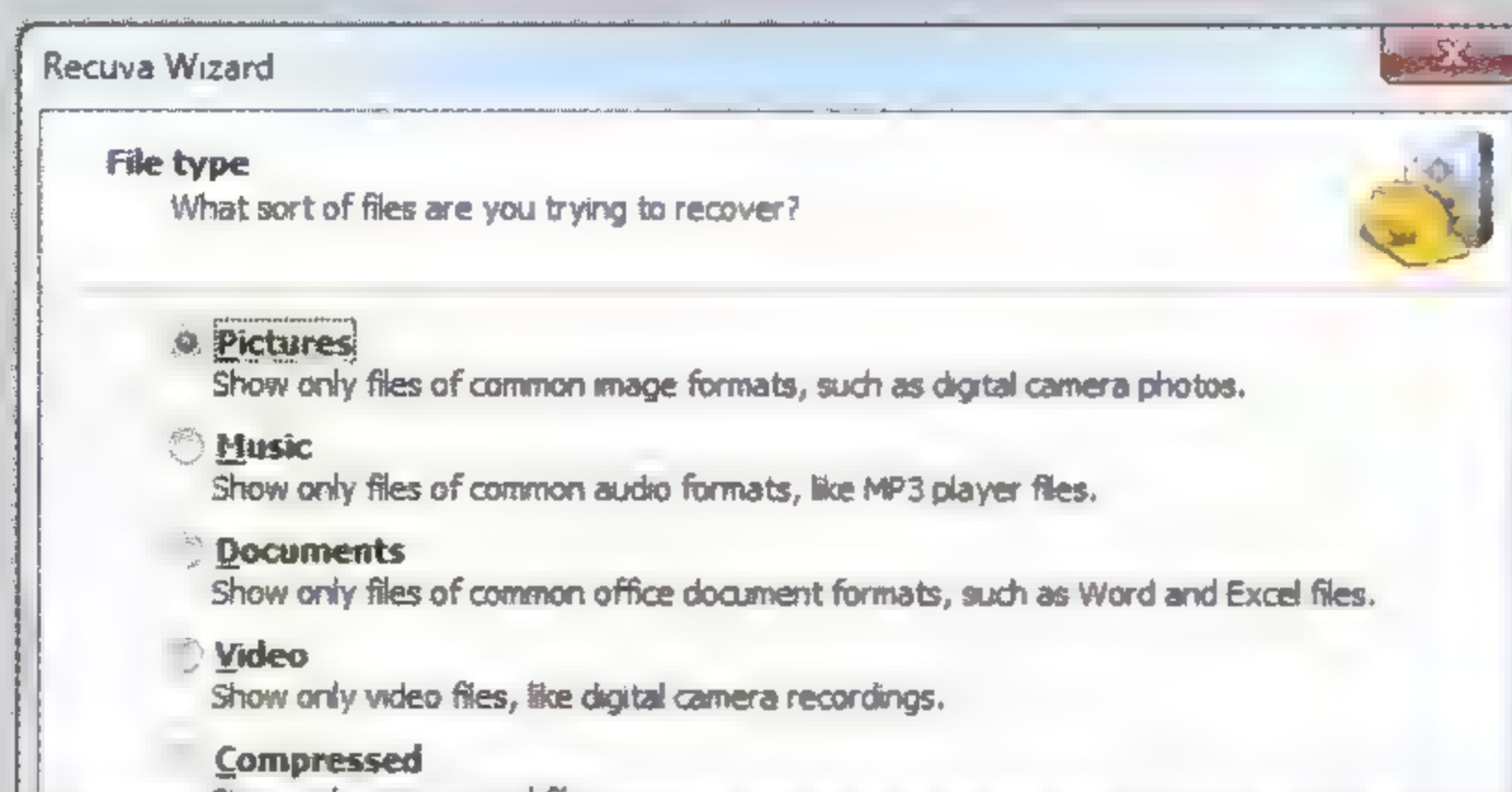
If your drive is damaged, the first port of call should be getting the existing files you need off the drive before running any of these processes. Once you run a deep scan with the extra options enabled, it will spend a fair amount of time poking through the entire disk. If your disk is in a particularly precarious state this could be enough to cause it to die for good, so you should approach this as if it was the last thing you will do to your drive before it becomes a non-functioning lump of metal.

If this process doesn't bear fruit, then you'll want to look into some of the commercial suites out there. Just keep in mind that if Recuva did find your file and say it has been overwritten, then it is unlikely these packages will be able to do any more. Once the data is overwritten, then it is gone for good, and all that remains is the reference to the file that once existed.

It is also worth knowing that if you are grabbing files from a reformatted drive, then you'll likely end up with a list of randomly named files. This is because the actual file names were lost when the reformat happened, and while the data is likely to still be there, there is no way for programs to dig up the name. In this case your only real option is to open them in the supporting programs and then manually rename files - this can be somewhat painful, but you should still be able to get at the actual data within, and that is ultimately what really matters.

## PHOTOREC

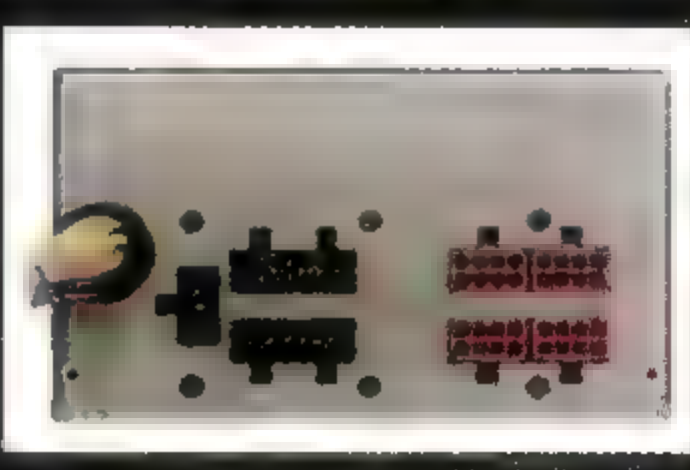
This open source program comes with a more complex recovery tool called Testdisc, and can be found at <http://www.cgsecurity.org/wiki/PhotoRec>. It supports a wider range of platforms than the windows-based Recuva, and is a good second port of call for power users. Photorec is designed as a non-invasive recovery option, and writes any files it discovers straight to disc - which means you'll need a second drive (this can be an external one) to put the recovered files on. It also takes a while to run, whereas Recuva can knock through simple tasks quite quickly. If you do want to go down this path, then there are walkthroughs and explanations linked off the wiki page; just keep in mind that, while its non-invasive nature means you won't accidentally ruin anything by using the software, it isn't something appropriate for beginners.



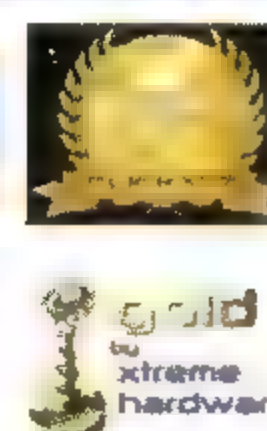
14cm fan for better cooling



PSU status monitor



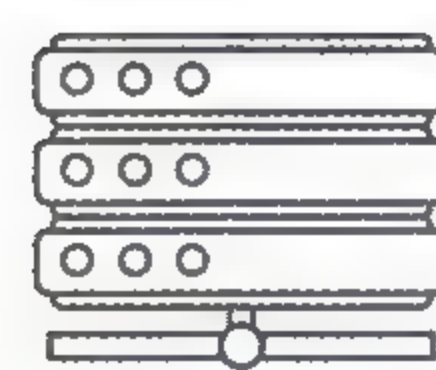
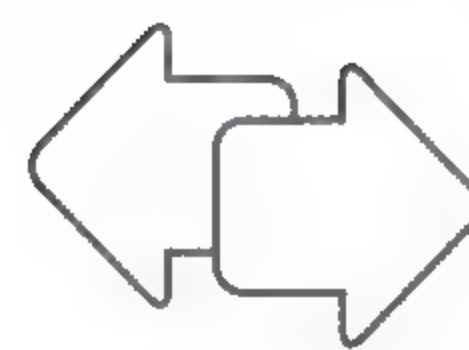
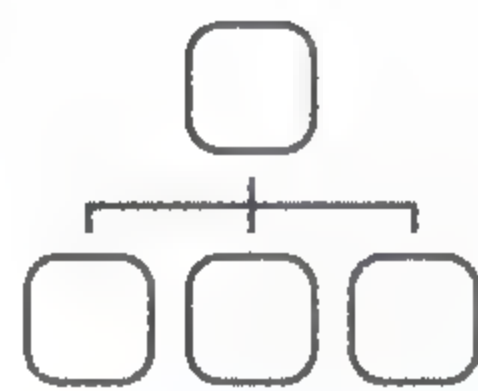
Cable management



## What the critics say:

The Thermaltake Toughpower XT 875W offers a great combination of features, aesthetics, quality, versatility, and performance. If you're a person that appreciates quality design and construction, then the Toughpower XT 875W will not disappoint you. - Pure Overclock





# IN-DEPTH COMPUTING

## Your NBN phone: Fibre phone vs VOIP

PREPARING YOUR HOME OFFICE OR SMALL BUSINESS FOR THE NBN? HAVE YOU THOUGHT ABOUT HOW YOU'LL MAKE PHONE CALLS? **ANTHONY CARUANA**

Once the NBN eventually rolls down your street and you're ready to switch over to it, and you elect to have a phone service via the NBN, you'll find that there are two ways of getting a phone service.

To explain this, we're going to look at Internode, but remember that there are other providers that also offer these services. In the case of Internode, it offers its NBN customers two methods of getting telephone services over the NBN, via either:

- Fibre Phone NBN phone service
- the NodePhone-Initial VOIP phone service

Or, you could elect not to pay for a phone service from a carrier like Internode, instead using Skype, or your mobile phone plan instead.

So what is the difference between FibrePhone and NodePhone?

### MAKING PHONE CALLS OVER THE NBN

If you are connected to the NBN via fibre optic cable, you'll find that there are two types of ports on the back of the NBN box that's installed in your home or office:

- UNI-V ports: there are two of these. They can take the same RJ-12 connectors that are on modern phones.

Uni-D ports: There are also four of these wider RJ-45 connectors – the same type that are used on Ethernet network cables.

With the UNI-V port, you can connect your current telephone, and assuming you have a contract for telephone services from your provider (e.g. Internode) you'll be able to make and receive calls just as you always have.

One advantage of this method, if you elect to get the optional battery backup unit with your NBN box, is you can keep making calls for about four hours if there's a blackout. In addition, you can plug your plain landline telephone straight in.

The alternative is to make calls using a VOIP service. This means your phone calls will need to travel through one of the UNI-D ports.

There are advantages here in terms of price, which we'll discuss below, although you'll need to make sure you have the right equipment – for

example, a VOIP-equipped router to plug your phone into. This then plugs into the UNI-D port on the NBN box.

### SO WHICH IS THE CHEAPER OPTION?

Remember, there are many different variables when comparing telephone costs – like call charges, flag-falls on international and mobile calls and different rates for special services such as directory assistance.

Last time we checked, the call rates and conditions were largely the same between Internode's Fibre Phone and its NBN VOIP service, called NodePhone-Initial.

But choose the Fibre Phone on NBN and you'll pay a monthly fee of \$29.99 – that's similar to paying a monthly line rental fee like the one you might be paying today for a telephone service over the copper network. In the past there's also been a setup fee, depending on whether you take a 24 month contract. Get NodePhone-Initial though, and there's no monthly line rental fee.

**Get more NBN tips and news for your small business at <http://www.bit.com.au/Tag/NBN.aspx>**



# Changing the world by how you look at it

FIONA TEAKLE LOOKS AT THE EVER CHANGING NATURE OF THE INTERNET, AND THE CHALLENGES IT RAISES FOR ICT PROFESSIONALS

**W**hen I was invited to submit this article to *PC&TA*, giving my perspective on ICT as Director of ACS Young Professionals, I received that invitation on email on my smartphone.

I quickly made an electronic note to myself which I stored in the Cloud, which then updated all my devices, automatically ensuring my calendar was up to date.

At the scheduled time my phone reminded me I needed to draft some thoughts and I did this using freeware.

You note I did all this on the web and although it's easy to take the internet for granted it is hard to believe that only 25 years ago none of this would be possible because the web was not invented then.

Back then I would have relied on snail mail or maybe a fax. My Motorola mobile would have cost about \$8000 and would not 'talk' to my personal organiser, which was probably a paper based 'Filofax', least of all would it talk with my TV, fridge, car, or X86 PC! If I wanted to hand deliver my article I would use a paper street directory to find the address. In fact I would not have done any of this stuff because I was not even born 25 years ago!

My first experiences of the internet were very limited growing up in the country. This meant access to changing technology wasn't as easy as in the city. Dial-up was always a bit exciting as we listened to the tone and waited for it to connect so we could chat to our friends on MSN messenger (which is about to be retired) or research school projects. Throughout my life the way I use the internet has changed dramatically. While speed continues to improve, a friend in country South Australia was still using dial-up as recently as three years ago.

The Internet not only totally revolutionised the world that existed before me, it continues to do so. Today it is estimated that 34% of the global

ICT can transform our entire world and the web can truly empower us...



population is online, with Australia (67 %) ranking only second after North America (78%).

The person who made all this possible - who in fact created the World Wide Web - is Sir Tim Berners-Lee, and the ACS was recently one of the sponsors of his Australian visit.

The ACS, as the custodian of ICT professional standards in Australia, was proud to sponsor his tour - not just because Sir Tim invented the web, or that he is listed as "one of the world's 100 living geniuses", but because he is a passionate advocate of the way the web can enhance and empower our lives.

Sir Tim is credited with saying that "you affect the world by what you browse". As an ICT professional I believe, and my ACS colleagues believe, that ICT is a force that can create value and immensely enrich our lives. As someone born into the Internet Age, I also believe that ICT can transform our entire world and that the Web can truly empower us - even for a young girl on dial-up in country South Australia.

Today social media political campaigns mean that the Facebook "like" button is much more than a personal expression among friends -

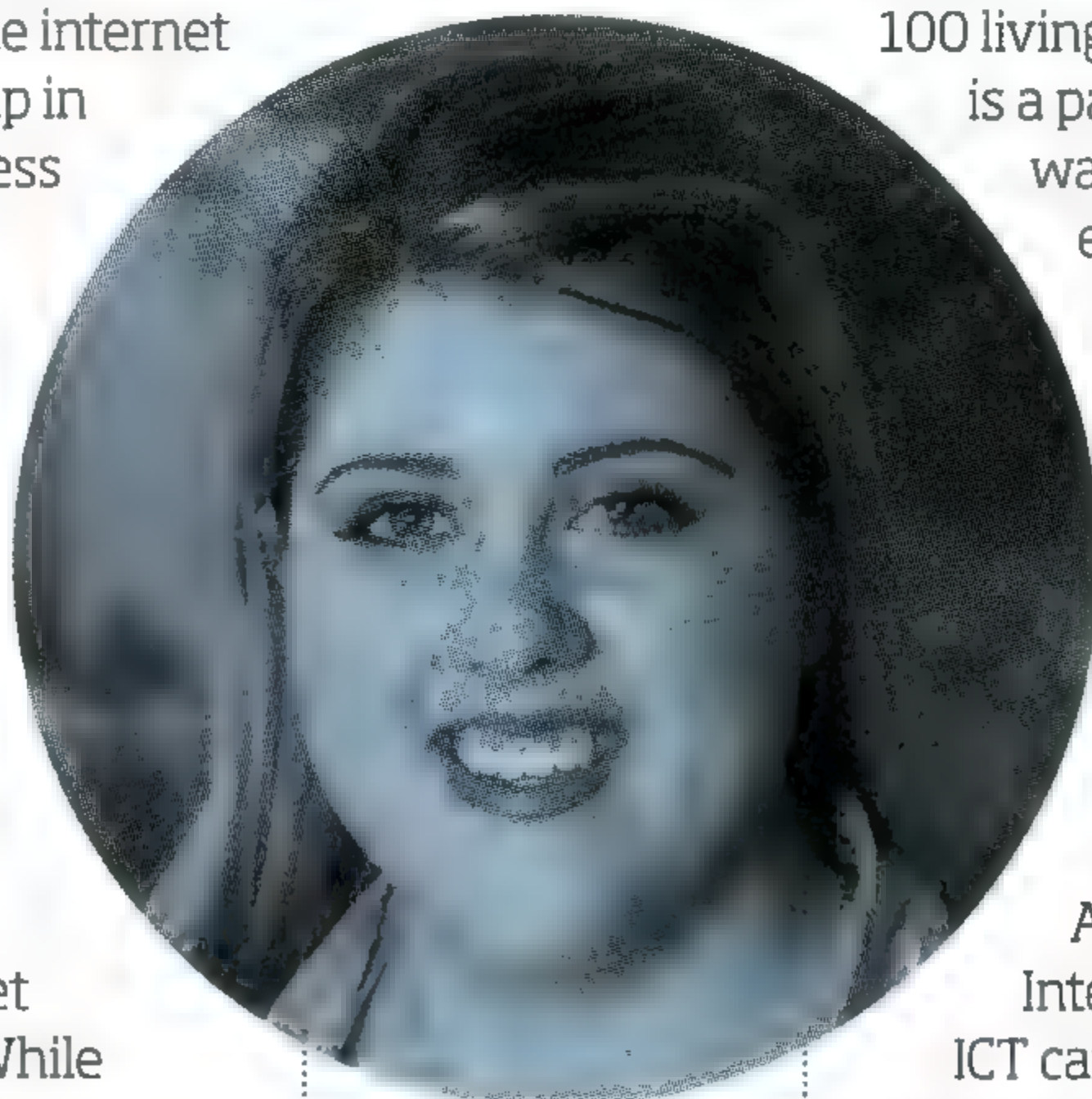
it's a tool for political change. Equally, our internet age can be fraught with challenges - so Facebook itself has made public statements about online safety, and governments continue to debate how to safeguard the lives and privacy of their netizens.

As ICT professionals, what's the learning for us here?

I began by thinking about the inventor of the Internet and how the Internet has evolved over 25 years but really what I'm thinking about - as an ICT professional - is how ICT changes faster than any other profession.

Today's hot skills in cloud, big data, mobility, apps and security will be old-fashioned and out of date potentially quicker than it takes to get a computer science degree. Imagine the programming skills you graduate with being obsolete on your graduation day!

For an ICT professional this is scary stuff. Just like the internet, this means a need for us to continually update our skills. Sir Tim also said the Internet does not connect machines, it connects people. Belonging to a professional society is the best way to connect with your peers to see and hear what is evolving in the day to day realities of our work and our lives. If it is true that we change the world by our browsing habits, then we can only improve the recognition of our profession and ICT by being engaged in it.



**FIONA TEAKLE** is Director of the ACS Young IT Board. You can contact her at [fionateakle@acsmail.net.au](mailto:fionateakle@acsmail.net.au)



# Input Output

**DAN RUTTER** BRINGS THE ANSWERS TO YOUR QUESTIONS LIKE NO-ONE ELSE CAN

## PEERBLOCK PARANOIA

**I** installed "PeerBlock" recently, and among the EIGHT HUNDRED AND TWENTY MILLION IP addresses it says it's blocking are some weird entries: Chunghwa Telecom, which Wikipedia tells me is "the largest telecommunications company in Taiwan", and some other foreign ISPs, and it also blocked "IPredator VPN", which is The Pirate Bay's own anonymous VPN service!

Is The Pirate Bay trying to hack me?!

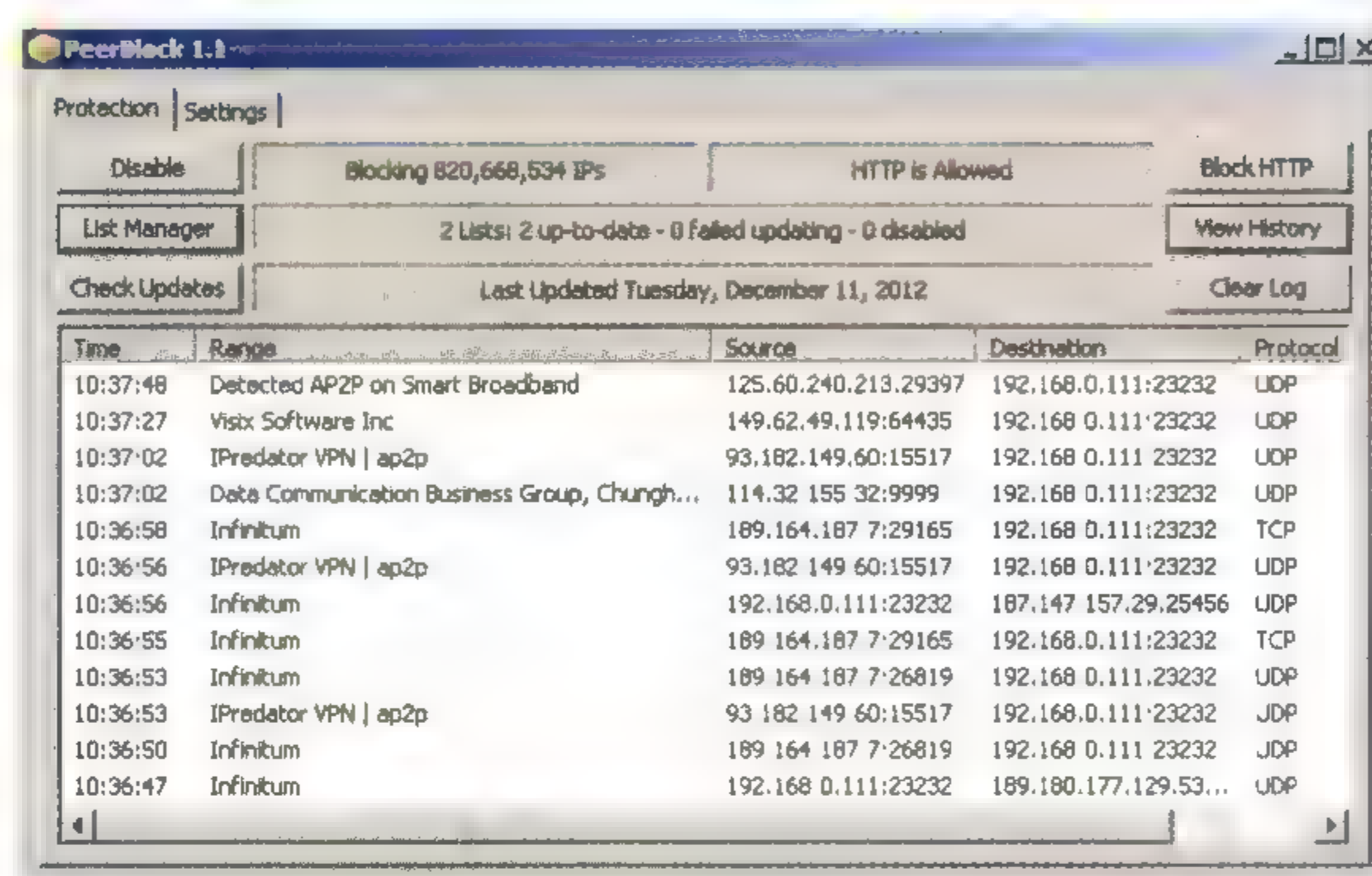
**Danny McCollum**

**O** The purpose of PeerBlock and the IP-address lists on which it's based is to protect you from (some) hackers and malware and such, and also from governmental and business bodies who may accuse you, correctly or otherwise, of copyright infringement.

By their very nature, P2P file-sharing programs invite the world to connect to your computer. If you're not running P2P software and not part of a botnet or something, PeerBlock shouldn't have much to do, besides intercepting the occasional probe from distant malware which very probably wouldn't have achieved anything anyway.

Just because something's on one of the several lists you can tell PeerBlock to use, though, doesn't mean it's evil.

There is, for instance, the "Educational" list, which blocks a wide variety of university and college network address ranges. In those ranges can be found plenty of normal P2P-using end-users, online gamers, plain Web users and so on. (There's also an option to allow traffic on the standard HTTP ports while blocking everything else, so you can still see .edu Web sites.) Those ranges *also*, however, contain system administrators who cut all Internet access if they catch users of the college network breaking the law, and/or just the network terms of service.



Likewise, there's plenty of perfectly valid traffic from foreign ISPs, but it cannot trivially be distinguished from foreign governmental bodies who *also* harshly punish P2P downloading, or political subversion. And then there are "honeypots", apparent P2P sharers who actually provide nothing but bad data, and/or record the IP addresses of people who contact them, for later legal harassment.

PeerBlock deliberately blocks much more stuff than it really needs to, to minimise the chance that it *doesn't* block something actually dangerous.

## FURTHER BLOCKAGE

**I** I work from home. I have a Reddit account, so I do not literally WORK from home, as much as I should.

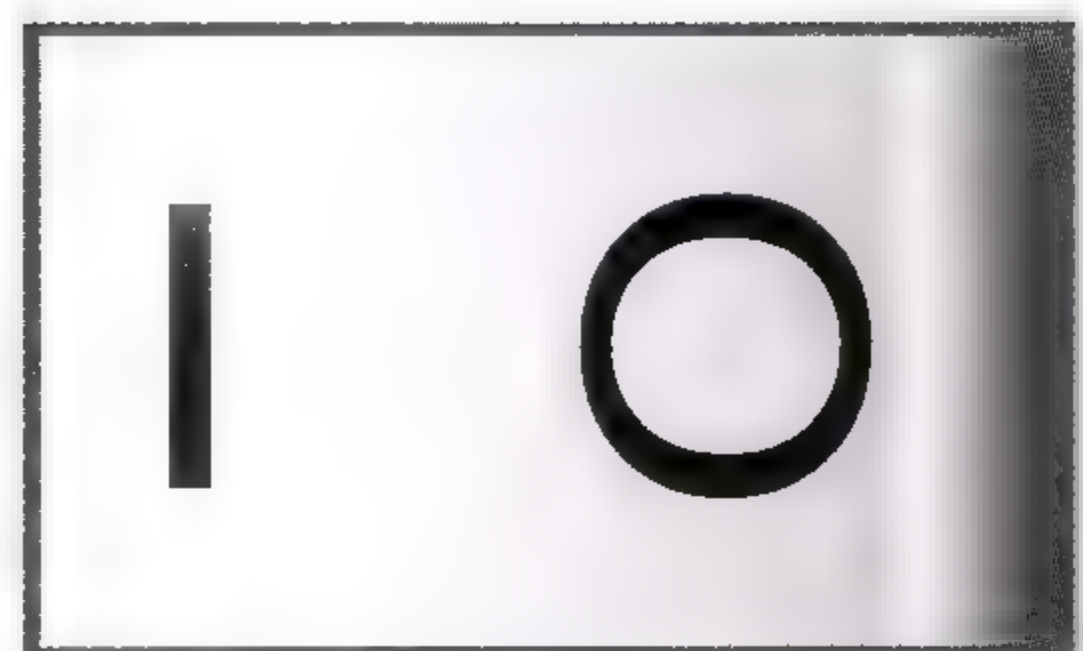
I actually need Internet access in order to do my job, but I need to put metaphorical razorwire around Reddit and some other timesinks, at least until the working day is over.

Is there a better way to do this than buying some net nanny software or other and telling it to block almost everything?

**Enzo R.**

**O** There are several free ways to block certain sites but not others.

You could, for instance, edit your hosts file (just called "hosts", and in C:\Windows\System32\drivers\etc by default for Windows) and add an entry that points to



some nonexistent IP address, like 127.168.0.2, for www.reddit.com and anything else you want to block. The format's very simple – just address, then domain name, and your computer will attempt to go to that address for that hostname until you remove that entry or comment it out with a # at the start of the line.

(This can also be used to block ad servers, nosey DRM nuisances, and anything else that irritates you. If something breaks because you blocked a domain, just remove the relevant line from the file. If you make a change but nothing happens, open a command prompt and type "ipconfig /flushdns". The hosts file isn't locked, either, so you can have "workhosts" and "playhosts" files, and just rename either to "hosts" and flush the DNS again when you want to change from work mode to non-work mode.)

If you'd rather not edit critical system files, there are several other options. The "LeechBlock" add-on for Firefox ([bit.ly/leechblock](http://bit.ly/leechblock)) will do it, as will StayFocusd ([bit.ly/StayFocusd](http://bit.ly/StayFocusd)) and Concentrate ([bit.ly/c-concentrate](http://bit.ly/c-concentrate)) for Chrome, and the list goes on.

## THE TELL-TALE TICKING THING

**I** Some part of my computer is making a ticking sound, and I can't figure out what it is.

It's not something stuck in a fan. It's not any of the drives (I unplugged them all but the DVD writer and booted Ubuntu from a CD, the ticking continued). It's





not the little "PC speaker". It's intermittent, too, sometimes stopping entirely, sometimes being louder, sometimes being softer. I even tried unplugging all of the cards, and the keyboard, and the mouse, and the network, and everything else except the power cord. Now the computer couldn't boot of course, but even before it gave the startup error beeps about that, IT STILL TICKED.

Nothing actually seems to be BROKEN, but this is driving me crazy. What on earth could it be?

**Josh Talbot**

Given that you've already eliminated every component except for the motherboard or power supply, then failing off-the-wall problems like a beetle stuck somewhere in the case, it has to be the motherboard or power supply.

One possible source of little ticking noises is an electrical arc striking between, say, the exposed copper of an abraded cable and the earthed chassis of the computer. It is very unlikely that a computer in this state would keep working well, though. A modern high-rated PSU can sometimes keep running even when it's surprisingly thoroughly shorted out, but the smell of PVC smoke being blown out the back of the computer would probably alert you to this problem.

A less extreme version of this problem could cause a ticking sound, though. Something inside or outside of the PSU could be sort of *half*-shorted, or the PSU could have damage that's reduced its output capacity, or just be legitimately running close to its maximum possible output. In these situations, solid-state components inside the PSU, like voltage regulators and transformers, can be changed slightly in dimensions by electromagnetic and heat effects, creating a ticking sound. (This is also why mains-frequency transformers hum. The small transformer in a PC PSU also hums, but it runs at a very high frequency, so you can't hear it.)

I think it's barely possible for the CPU-power regulators on the motherboard to do this, too, but the PSU is a more likely culprit, and easier to swap out. And, as I've said many times before, if it's important to you that your computer not be off-line even for a weekend, then you should have a spare PSU sitting on the shelf in case of emergencies anyway.

## I/O OF THE MONTH

### EVADING THE LIDLESS FLAMING EYE OF GOOGLE

Whenever you click on a Google link these days, you actually go to some huge Google URL that then redirects to the thing you thought you were clicking. Like, if you search for "pc authority" then click it will say it's "www.pcauthority.com.au", but redirects through "http://www.google.com/url?sa=t&url=http://www.pcauthority.com.au/&usq=\_\_on and on for 192 characters.

It's rather not tell Google about every single search link I click - I want to go there "direct". Is there some way to do this other than switching to Bing or bktom or something?

**Tash Lewin**

Man, I remember when Wired's "BotBot" was the big name in search.

For a while, Google used those large redirector URLs for some search results and not for others, but now they do seem to do it for everything. And going somewhere via the redirectors does indeed tell Google where you went. They're also annoying if you try to copy the URL without clicking it, because you'll copy the redirector URL, not the destination.

Since the displayed URL for each search result is, as you say, the actual destination, it's quite easy for a small particle of software to get around this. You can do it with a Greasemonkey script like "Google Anonymizer" ([bit.ly/g-anon](http://bit.ly/g-anon)), or with a standalone browser extension. The Firefox add-on "Google/Yandex search link fix" ([bit.ly/gy-linkfix](http://bit.ly/gy-linkfix)) does it, as does the "Undirect" extension for Google's own Chrome ([bit.ly/c-undirect](http://bit.ly/c-undirect)).

(Oh, and as far as alternative search engines go, [tickdork.com](http://tickdork.com) is the only one that has an official policy of strong privacy protection and absolutely no filtering based on previous searches. See [tickdork.com](http://tickdork.com) for more.)

(Josh got back to me. Yes, it was the PSU.)

### INTERRUPTIBLE POWER SUPPLY

I got a second-hand UPS for \$10, and its batteries still seem pretty decent (it ran a desk fan for 25 minutes before conking out) but it doesn't power my PC. Everything seems fine, but if there's a one second blackout or I test it by pulling the plug out of the wall, it beeps once then dies, and my computer turns off. I remember in the dear departed Atomic you recently had one problem like this that was just a loose plug on the power cord, but that definitely isn't the case here.

What's the problem here?

**Pryor Paulet**

Beefing up the batteries increases UPS run time, but not load capacity.



The UPS can't output enough power to run your computer. The battery capacity has little to do with this; it determines how long a UPS can power a given load, but only slightly affects how large a load it can handle.

(There is a small real-world relationship between battery condition and UPS load capacity; clapped-out batteries may not be able to deliver as much current as they did when new.)

UPSes are rated in "volt-amps", VA, with one VA similar to but not quite the same as one watt ([dansdata.com/gz028.htm](http://dansdata.com/gz028.htm)). Get a cheap electricity meter ([dansdata.com/quickshot041.htm](http://dansdata.com/quickshot041.htm)) and see what your computer draws. If the meter says it draws, say, 400 watts, then you need a UPS with a rating above 400VA. 500VA should do nicely.

To reduce the load on a UPS, try powering less gear from it (like, your computer, but not your monitor). You can also use software from the UPS manufacturer that lets most UPSes, via a serial or USB lead, tell the computer to shut down when the power goes out. Or in some cases do cleverer things, like shutting down Folding@home or anything else that uses a lot of CPU time.

Dropping CPU load to near-zero will with various modern CPUs cause the computer to automatically reduce its clock speed, thereby reducing power draw even more. Even if your UPS has enough grunt to run your computer with full CPU and graphics-card loads, reducing that load will let the UPS last through a longer blackout.

**IF YOU HAVE A QUESTION FOR DAN RUTTER, SEND HIM AN EMAIL AT [IO@ATOMICMPC.COM.AU](mailto:io@atomicmpc.com), AND HE'LL TRY TO FIND A SOLUTION FOR YOU.**



# The graphical web returns to ground zero

**TOM ARAH** TAKES A LOOK AT ADOBE'S PLANS TO REPLACE FLASH WITH NEW TOOLS AND OPEN STANDARDS, AND SEES PLENTY OF REASON FOR OPTIMISM

For more than 15 years, professionals wishing to push the web envelope beyond the capabilities of HTML turned to Adobe Flash (or, more recently, Silverlight). Now, though, the future of web browsing is moving to mobile browsers that no longer support these plugins, so what's the modern alternative? Without a plugin, the only way to do it is in the browser. Both Adobe and the web design community must follow Steve Jobs' advice from 2010, when he announced Flash wouldn't be allowed onto iOS: use open browser standards instead.

As Jobs put it then, "HTML5, the new web standard... lets web developers create advanced graphics, typography, animations and transitions without relying on third-party browser plugins (like Flash)... Perhaps Adobe should focus more on creating great HTML5 tools for the future, and less on criticising Apple for leaving the past behind." Put that way it sounds reasonable and straightforward, but Adobe disagreed – no surprise given Flash was its unique selling point, the rich web format that held together its entire Creative Suite (from Premiere Pro through to InDesign), and the basis for its future mobile plans.

Without Apple's support, and hence without cross-platform universality, the writing was on the wall, and so the rhetoric and Adobe's entire business strategy has changed. Flash in the browser is now rarely mentioned, and Adobe has repositioned itself as a champion of next-generation HTML5, taking Jobs' advice in launching a range of tools designed to set the benchmark for standards-based web creation.

The most significant of these is Adobe Edge Animate, which is designed to create the rich, animated, interactive web experience that previously required Flash. It costs US\$499, but to encourage take-up Adobe has added it to the apps available through Creative Cloud and has made this first release free – here's your chance to give your standards-based web projects a professional edge.



Adobe has repositioned itself as a champion of next-generation HTML5



**TOM ARAH**

Set up his Edinburgh-based design company in 1987. As well as design work, he provides training and consultancy

## BACK TO THE DRAWING BOARD

So how does Edge Animate compare to Flash? Let's start with the drawing tools, and you're in for a shock since there are only three: the Rectangle tool, Rounded Rectangle tool and the Ellipse tool. Flash Professional's Deco tool for drawing animated fire or vegetation effects is long gone. You don't even get a Brush, PolyStar or even Pen or Path tools – in fact, you can't actually draw a straight line unless you fake it with a thin rectangle! It's back to the drawing board alright, but without any tools.

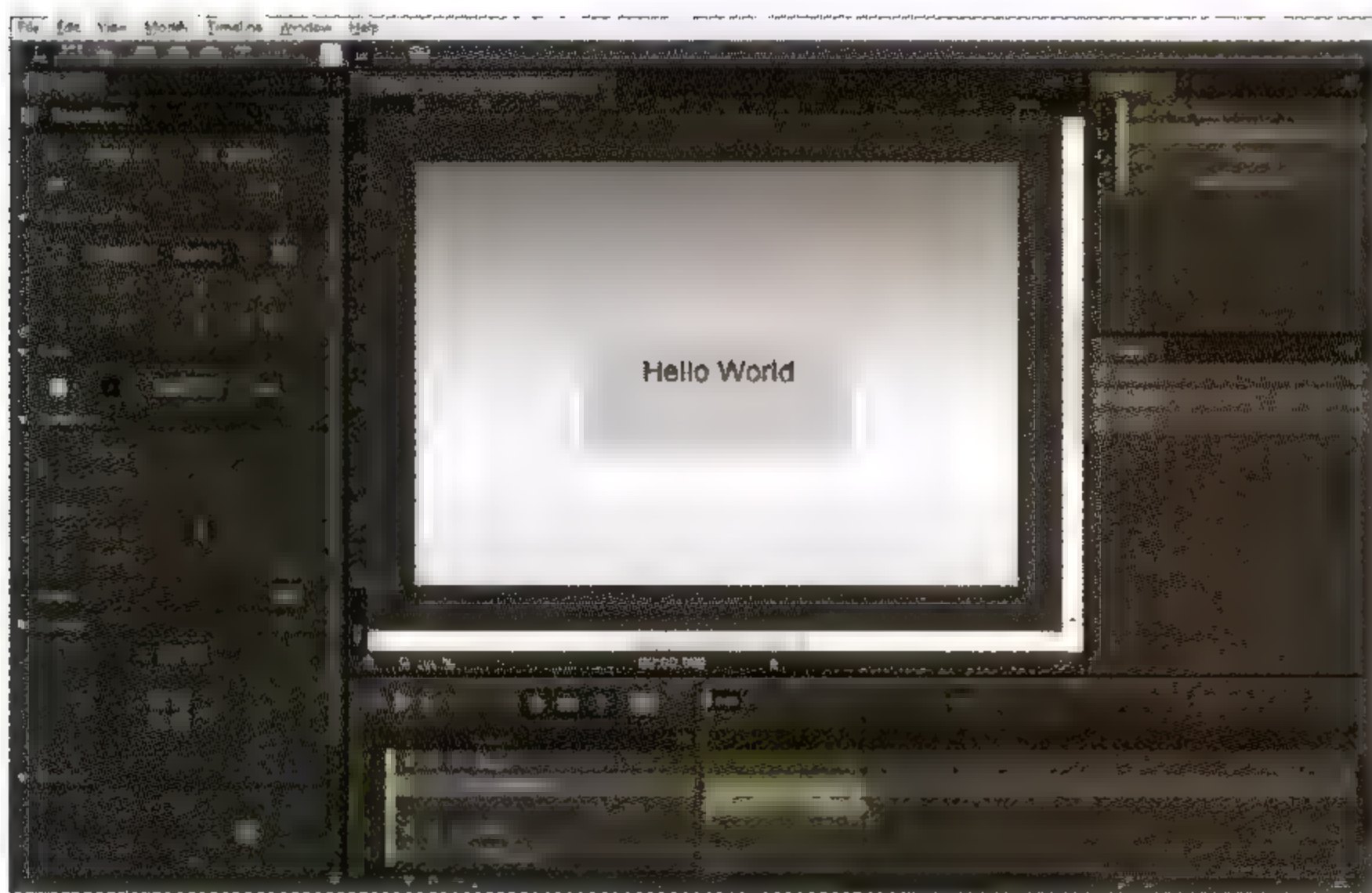
Edge Animate's formatting capabilities are no compensation, either. From the Properties pane you can choose flat colours for fill and outline of rectangles or ellipses, set the line width (solid, dashed or dotted), and that's about it. Special effects? A flat opacity setting and a shadow option, or to really impress you can set a different curvature for each corner of your rectangle. There are no gradient fills, no textures, no procedural effects, brush outlines, graduated transparency or blend modes. The message is pretty clear that you're supposed to do any serious artwork externally, so you might expect that Adobe has enabled you to cut and paste vector drawings directly from Illustrator into Edge Animate. You'd be wrong: the only route is via awkward export and import. Moreover, scalable vector

graphic (SVG) images are automatically flattened, so you can't access their independent elements, which means you'd be better off using JPEG or PNG bitmaps unless you explicitly need resolution-independent scalability. As the help file puts it, "for the time being, it's safer to use PNG".

Edge Animate does at least let you add text within the program, although you can edit it only in an awkward little dialog box. Formatting includes control over letter, word and line spacing, as well as paragraph alignment and indent. It also includes size and font – but forget about advanced effects such as fitting text to a curve, or within an irregular shape (not that you can create one anyway). Worse still, don't expect to simply specify any typeface installed on your PC as you could with Flash – the default is those same old web font families of which we're all so familiar and heartily sick (although Adobe's new Edge Web Fonts service may improve matters here).

Animation is handled via the Timeline panel, by specifying time-based keyframes and changing property values. It's very different from Flash Professional's frame-based approach and takes some getting used to, but it's certainly more modern and, as programs such as After Effects show, can be just as powerful. However, the power of property-based animation clearly depends on the properties on





offer, and those are disappointing.

There are other limitations. Without frames you can't quickly create flick-book-style sequential animations, those "vector videos" with which Flash made its name. Neither can you create advanced effects such as animating along a custom motion path, shape-based tweening, 3D transforms, variable filter-based special effects or bone-based animation. It's all pretty static for a dedicated animation package.

So what about interactivity? As you'd expect, this is handled through scripting. To create a button, for example, select a drawn or placed element, then Open Actions and select an event (say click, mouse-over or touch), then enter the desired JavaScript code. To help with this Edge Animate has a range of prefabricated snippets for timeline handling (such as play, stop, playReverse), for managing your symbols and elements (hide, show, setVariable), and for loading a new page/URL. Put these snippets together and it's relatively straightforward to create simple interactions.

However, comparison with the latest Flash Professional is once again telling. Edge Animate offers only 16 snippets while Flash Professional CS6 offers dozens, but the real difference becomes apparent when you move beyond the presupplied samples. With Flash Professional's ActionScript 3 API you have full drill-down access to all the properties, methods and events of hundreds of classes ranging from Accelerometer through to XMLSocket, plus code IntelliSense and debugging capabilities. With Edge Animate, you're limited to controlling the capabilities of the browser through JavaScript, without any special coding or debugging support beyond syntax colouring.

### TIME TO PUBLISH

Okay, you've struggled through and are ready to publish. Using Flash you can generate a single, easy-to-deploy, highly efficient SWF file of less than 10K in size containing all the vectors, bitmaps, text and code, ready for streaming

Compared to Flash Professional or Expression Blend, Edge Animate's creative power is dismal

At least Edge Animate offers the sort of universality that Flash no longer can

Adobe is working on new CSS-based capabilities to improve browser based design.

delivery to all supporting platforms and browsers via the Flash player. With Edge Animate your output is a hodgepodge of separate HTML, CSS, JavaScript and asset files, and even the simplest animation requires more than 200K of support code in the form of jQuery and the dedicated animation framework that Adobe built on top of it.

At least Edge Animate offers the sort of universality that Flash no longer can, and your animation should appear as designed on Android, Kindle, BlackBerry and the all-important iOS, thanks to shared reliance on the WebKit layout engine that Edge Animate employs (plus the current most popular desktop browsers - Chrome on Windows and Safari on Mac - are also WebKit-based). But remember that WebKit isn't the only target, because on the desktop there are Firefox, Opera and Internet Explorer, along with their increasingly important mobile incarnations.

Thankfully, the latest version of each offers advanced support for HTML5 so your project should render more or less as expected (but only more or less).

A bigger problem is that not all your site visitors will be using the latest versions and, in particular, older versions of Internet Explorer offer only spotty HTML5 support, while IE8 and earlier can't render SVG at all. There are probably as many non-HTML5 desktop browsers as there are HTML5-only mobile browsers. There's a partial workaround thanks to the ability to turbo-charge older IE releases using Google ChromeO Frame. This just about enables Edge Animate to claim web universality and seize Flash's crown, but asking visitors to download a plugin to view open content is both awkward and undesirable.

There's another problem, too. Getting your project to appear is one thing, but performance is another. No-one would claim that Flash was perfect, but both player and SWF format were designed from the ground up with one aim: to ensure consistent delivery and smooth playback over the web. With open-standards-based delivery, both renderer and JavaScript implementations are out

of Adobe's hands and depend on widely varying browser implementations. This caveat in the Edge Animate FAQ is significant: "Please note that performance of animations is based on a number of factors, so it is possible to create content with less than optimal performance."

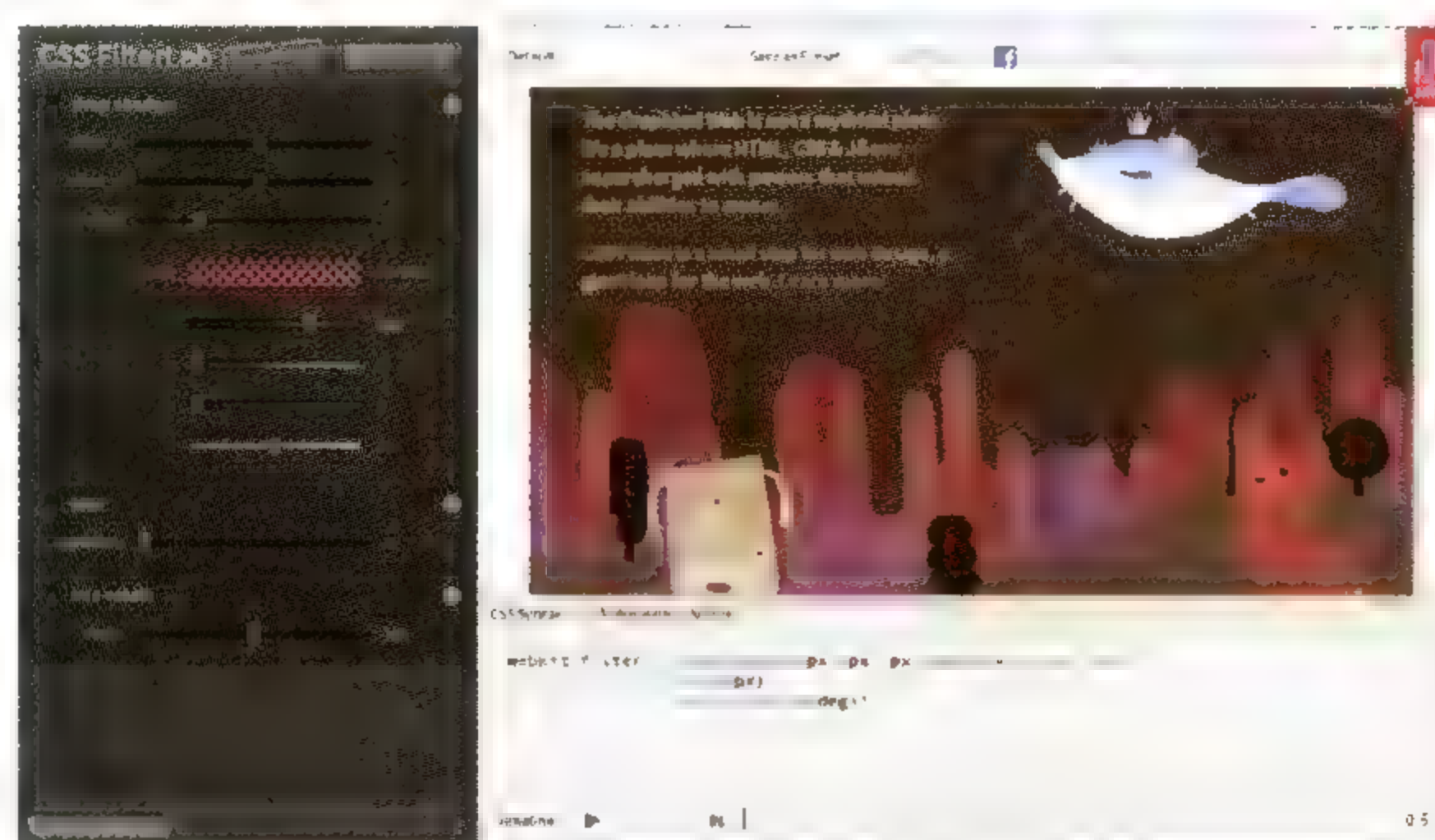
This is more than just an occasional issue. I loaded Adobe's Edge Animate showcase example (<http://tinyurl.com/8zubwzw>) under recent versions of Chrome, Firefox and Internet Explorer, and discovered inconsistent layout (for example, the main strapline overflows onto two lines under Chrome), long load times, occasional execution problems (on one occasion Firefox froze), and generally jerky playback, especially of more complex animations. Surprisingly, IE9 seemed to deliver the best performance, but even this wasn't as smooth as I'd expect with Flash.

### THE ONLY WAY IS UP

Let's take stock. Compared to Flash, Edge Animate's drawing tools, creative options, animation capabilities, programmability, deployment and performance are awkward, underpowered and inefficient - and that's ignoring Flash's extra capabilities for video, Rich Internet Application development, console-quality 3D and so on. Edge's performance isn't only embarrassing compared to the cutting edge, but incredibly it offers less creative power than the very first release of Flash. This brave new world Steve Jobs promised is actually a step back 15 years.

So what's going on? Many will accuse Adobe of failing to deliver, even of sabotage to make Flash look good, but the problem lies with the technology on which Edge Animate is built. HTML was designed as a mark-up language for structuring hypertext content, with all presentational issues deliberately avoided. CSS has improved HTML's design capabilities immensely but it isn't PostScript. Moreover, all usage of CSS, as with SVG, is dependent not only on browser developers' varying implementations but on the lowest common denominator of the worst implementation. If all you have to play with as a universal design platform is the <div> element and some basic CSS, it isn't surprising that you'll end up desperately shuffling PNGs around.

There are reasons to remain positive, however. At least it's completely clear now that the battle has been conclusively lost: Flash and Silverlight are being driven out of the browser so an open web standard alternative is urgently required. That's precisely what Edge Animate delivers. Two-





and-a-half years after Steve Jobs' bombshell abandoning of Flash in favour of HTML5, we finally have an open-standard alternative that more or less works, more or less universally, and more or less enables HTML to start moving into Flash's territory.

Yes, we're at graphical ground zero with HTML5, but this means the only way is up. Things should start looking brighter soon, as IE8 and below are flushed out of the system and it becomes safe for both Adobe and its designers to start deploying SVG and more advanced CSS3 features. With support for vectors, web fonts, richer formatting and transitions, HTML will radically improve as a creative platform. Presumably Edge Animate will take advantage, and PNG bitmaps will take on a supporting rather than starring role.

HTML and Edge Animate should finally catch up with what Flash 4 could deliver in the late 1990s, but that won't be the end of it. Along with the launch of its Edge tools (including Code and Reflow, which I plan to look at in a future column), Adobe also announced open-standard initiatives aimed at overcoming five limitations of current web design: the inability to deliver magazine-style flowing layouts; irregularly shaped text islands; blend mode effects; geometric transformations in 2D and

3D space; and cinematic effects such as blurs and colour transforms. To fill these holes it's championing new W3C (World Wide Web Consortium) modules called CSS Regions, CSS Exclusions, CSS Transforms, CSS Compositing and CSS Custom Filters, and working with the major browser manufacturers to implement them.

This isn't all. Visit Adobe's demonstration site at [www.thegraphicalweb.com](http://www.thegraphicalweb.com) and the explanatory video (<http://tinyurl.com/apbs6t6>), and you'll see the company has a roadmap for rebuilding the web's graphic capabilities starting with HTML's core <div> element. CSS and SVG are clearly crucial for this, but eventually <canvas> will be too. This HTML5 element allows a browser to write pixels directly to the screen as instructed by JavaScript. Using dedicated libraries such as WebGL it's even possible to render 3D shaders via the GPU - again something that Edge Animate should be capable of taking advantage of in future, along with <video> and <audio> once browser support becomes universal and stable.

How far can all this go? With web vectors, fonts, pixels, multimedia and ever-improving JavaScript performance and support frameworks, can we simply recreate the Flash Player using

## HTML and Edge Animate should finally catch up with what Flash 4 could deliver

only these open standards? I doubt it. With Flash and Silverlight, Adobe and Microsoft were able to build dedicated rich design, application and performance capabilities from the ground up by targeting single, tightly controlled players. Trying to graft similar power onto a mark-up language that wasn't intended for graphic design, in a robust, reliable and efficient fashion across varying browser implementations is asking too much. It may be possible to raise the ceiling for HTML5, but not to break through it.

The loss of Flash and Silverlight placed a cap on the capabilities of the web platform, with the result that the richest experiences are being driven out of the browser and into the app stores. This isn't necessarily bad news for Flash and Silverlight developers, who are best placed to produce such apps, but inside the browser the only future is HTML. The good news for web designers is that while we have to work with an inferior platform for now, its quality looks set to improve comparatively quickly. Don't be too put off by the limitations of this first release of Adobe Edge Animate, because the standards-based web is about to turn into a far richer and more expressive platform, with which designers will still be able to produce stunning work. ■

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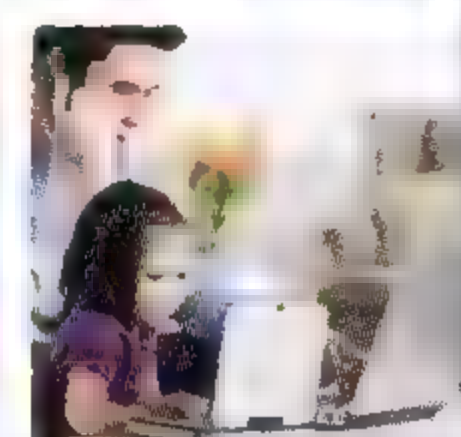
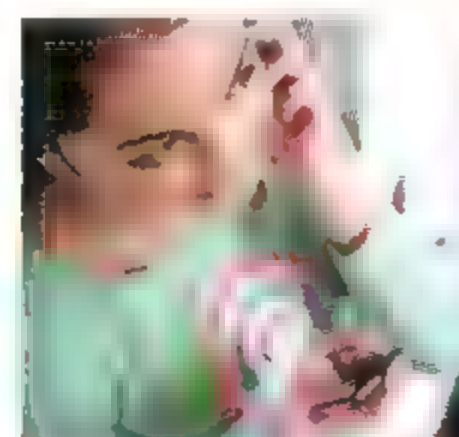
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# A month getting to know Office 2013

**SIMON JONES** SAYS MICROSOFT HAS FIXED SOME OF OFFICE 2013'S PROBLEMS WITH THE FINAL RELEASE VERSION, BUT TOO MANY FRUSTRATIONS REMAIN

I've been working with the release version of Office 2013 for about a month now: Microsoft made it available to Volume Licence holders and those with Microsoft Developer Network (MSDN) subscriptions just after I wrote my last column. So what's improved since the Preview, what's just as annoying, and has anything actually become any worse? My overall impression is that, while some of the Preview's bugs have been fixed, not much has changed. There are some improvements but I think I'd characterise these as being "less bad" rather than "better", if you get my drift.

The application icons are marginally less confusing as they're more easily distinguishable: the blue of the Word icon is now visibly different from that of Outlook, but Lync is still the same colour as Outlook. The glyphs used on these icons are clearer, but Lync with a yellow "Away" spot is still easily confused with Outlook showing a "New Mail" envelope: they're both the same blue with a white letter and a yellow blob in the bottom-left corner.

There are now three colour schemes to choose from - White, Light Grey and Dark - or as we call them round here, "Blinding", "Boring" or "Dead".

The White scheme is just as vile as in the Preview, with a headache-inducing bright white ribbon and application backgrounds. The Dark theme removes the application colour from the status bar and the File menu, replacing it with a dark mud colour. The application background becomes a gruel grey and the ribbon the sort of grey that you would see on an unwashed white van. The one thing this Dark scheme isn't is dark - it's merely less bright. The least offensive colour scheme is Light Grey, which keeps the coloured status bar and File menu but slightly tones down the blinding ribbon and application background. It's still very light and very boring.

The status bars on all the applications still use capital letters for all their messages, except for Outlook, which is a little muddled and says things like "THIS FOLDER IS UP TO DATE. NOW UPDATING Sent Items. CONNECTED TO: MICROSOFT EXCHANGE". Putting that folder name in mixed case just emphasises how strange it is to have the rest of the message in shouty capitals. At least Microsoft has toned down the status bar font so it isn't quite so in your face.

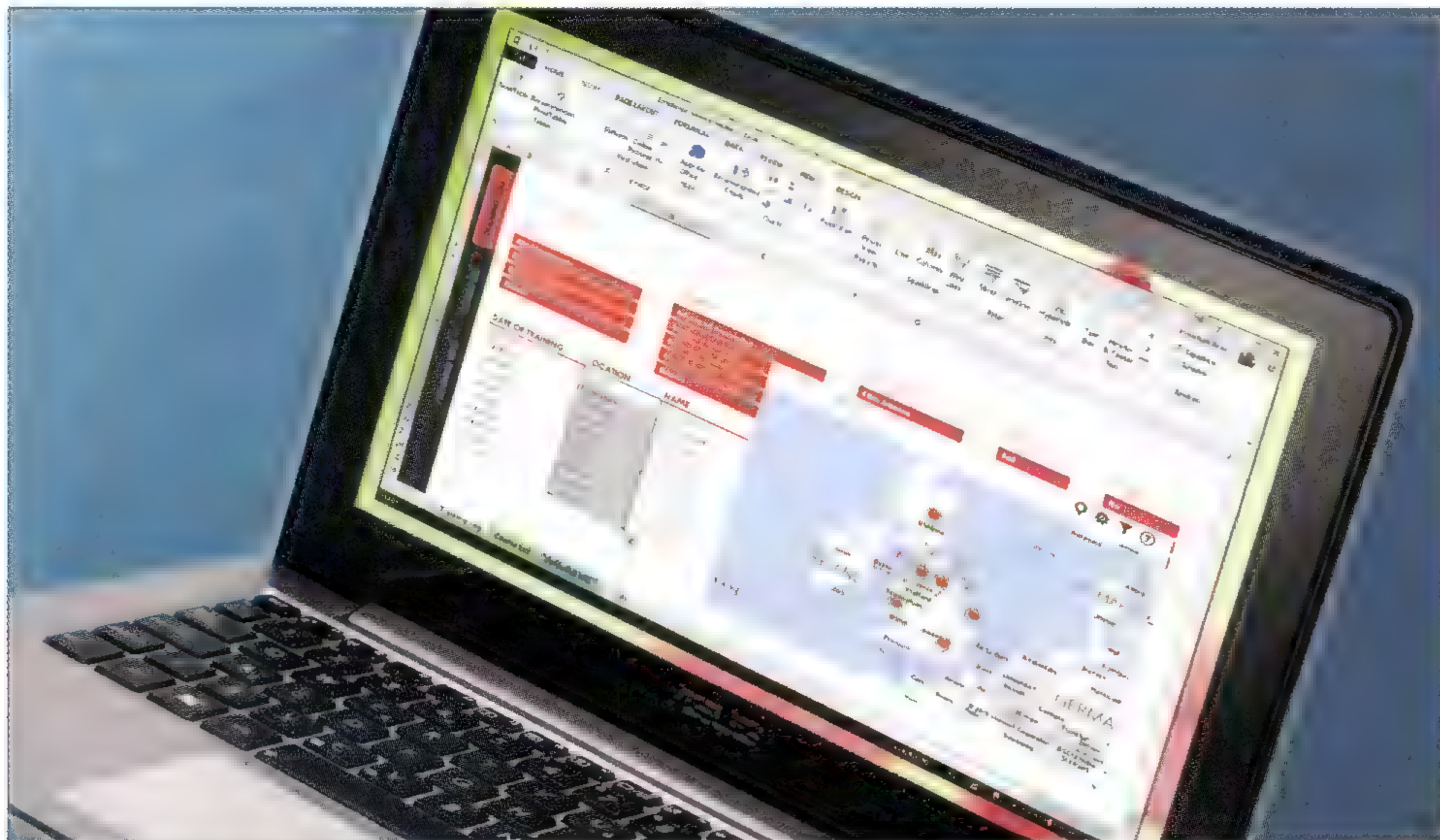
The ribbon tabs are presented in

While some of the Preview's bugs have been fixed, not much has changed

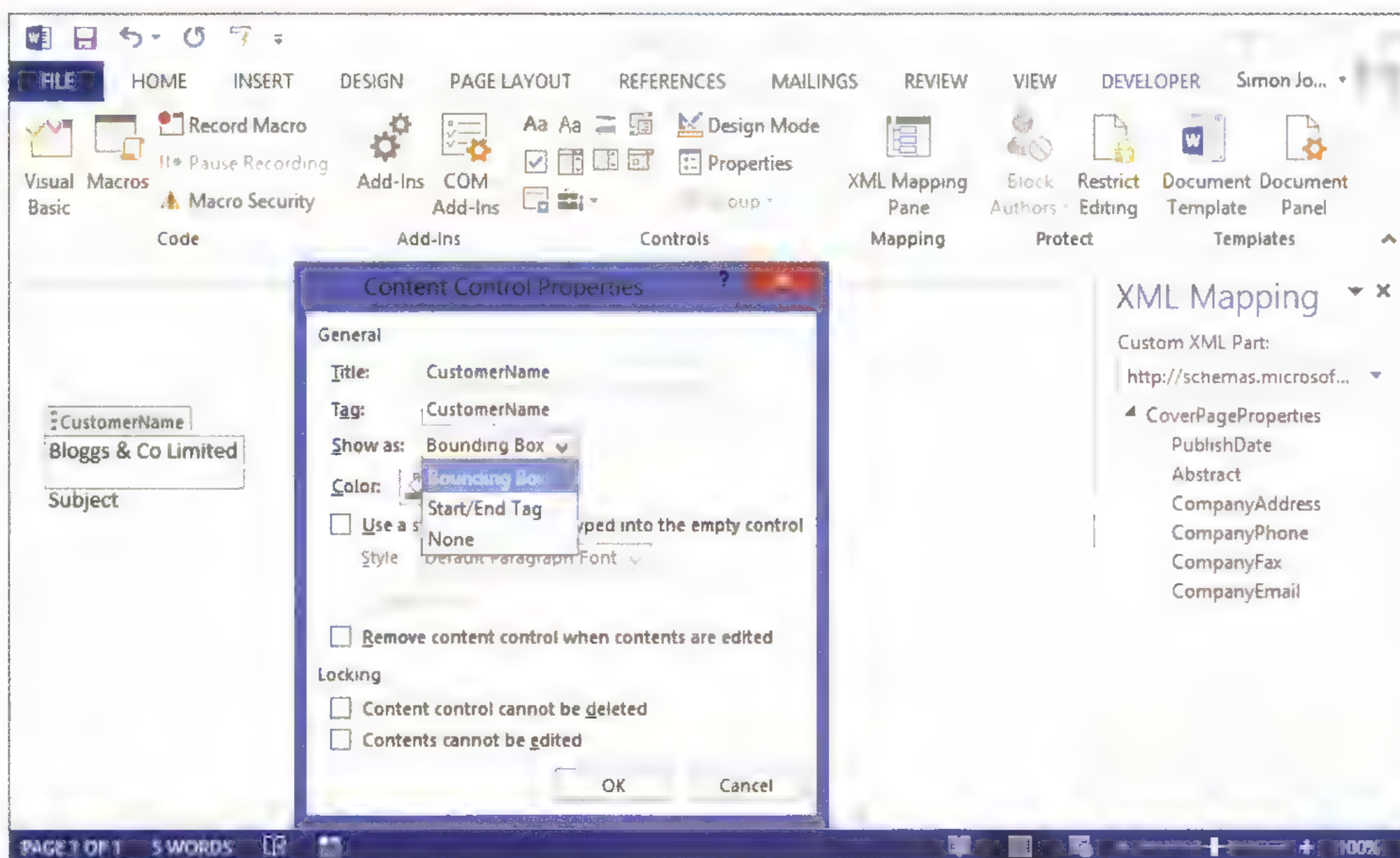
capitals too, but those provided by add-ins are still in mixed case. This includes add-ins from Microsoft, such as the "Load Test" and "Team" tabs in Excel provided by Microsoft Team Foundation Server. Having some tabs in mixed case and some in capitals results in a disjointed appearance. Microsoft has speeded up the transition of the caret, when it moves from one character to another, so that the animation isn't quite so noticeable; the selected range in Excel continues to annoy the hell out of me, however. Select a range of cells and they're outlined in green, which is the chosen application colour for Excel. Now select another cell and this green outline shrinks and slithers over to where you've just clicked like some kind of reptile - a completely unnecessary animation that makes my skin crawl. It doesn't add anything to the utility of Excel, and when you're presenting a spreadsheet to a remote colleague via Lync the animation smears, judders or just takes a long time.

The ribbon text and icons still look very grey and washed out. The text is in a nice font, but none of it is black and the grey-on-grey makes it far harder to read than it should be. The icons use a palette of a few muted colours and are mostly grey with a single accent colour, but at least they're not as bad as those in Visual Studio 2012. When Microsoft introduced these UI changes in Visual Studio 2012, it claimed this was so the code you write would stand out more from the tools. I might accept this same explanation for Office, if Microsoft hadn't also changed the fonts and colours used in the standard document themes to make your documents more grey and muted as well. The default font for titles and headings used to be Cambria, Bold, in dark blue; in Office 2013, the title and heading font is Calibri Light - a much thinner font - and in a pale blue, which makes the headings stand out far less than they did in Office 2007 and 2010.

The default colour scheme has also ditched the bolder red, orange and purple in favour of lighter orange, yellow, green and grey. The old font and colour combinations are still available, but you have to choose them separately from the Design tab, since there isn't a built-in theme that lets you select them with one click. I strongly suggest that everyone looks at the built-in themes and style sets to see whether one of them matches your





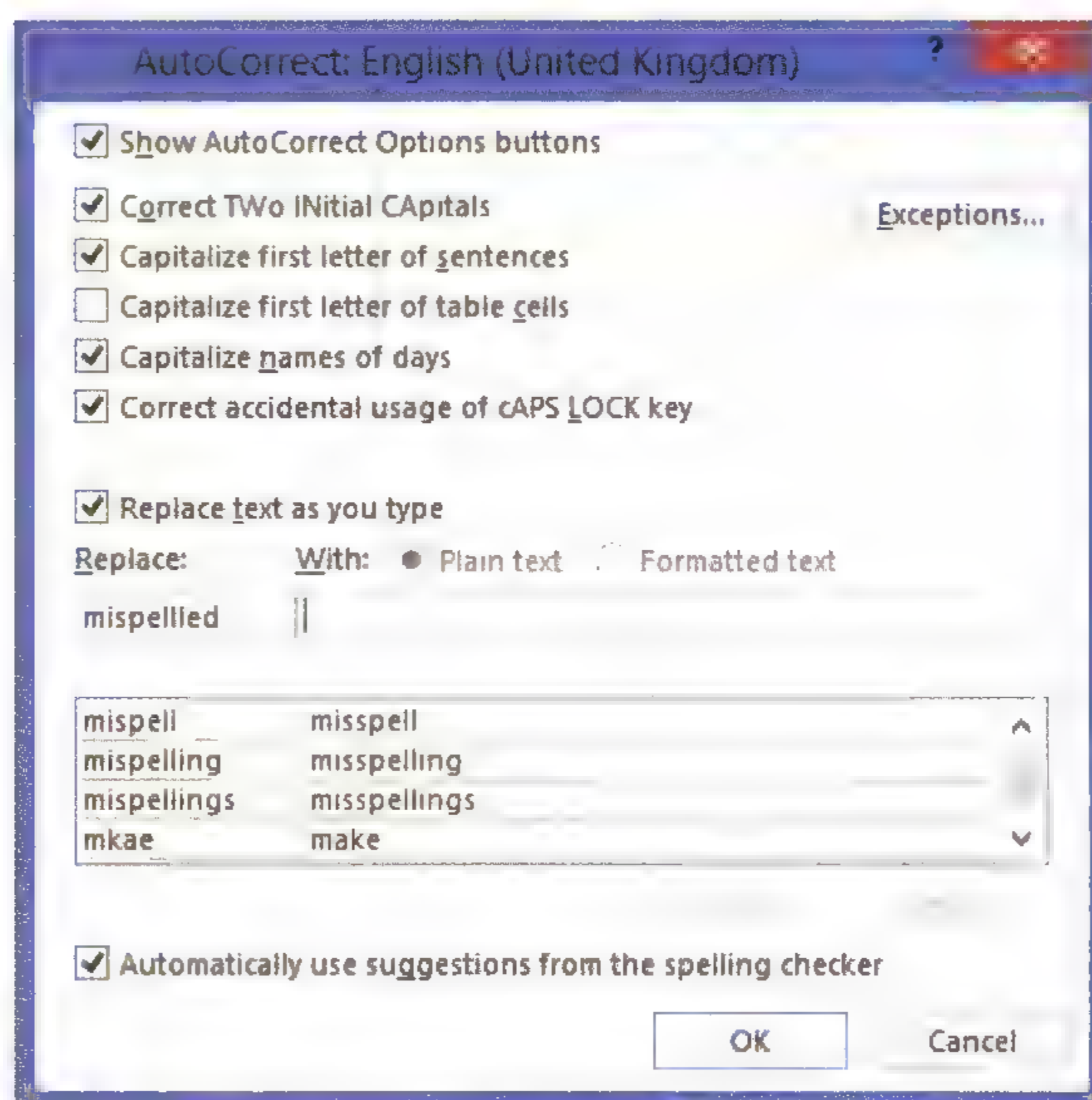


AutoCorrect entries, which could be added directly from the right-click menu, now have to be done manually

company's personality better than the default. You can also customise any theme with different fonts, colours and effects, and then save the result and make it your default theme. System administrators can distribute custom themes to all the users in a company so that everyone uses the same one, unifying the look of all your documents across Word, Excel, PowerPoint and Outlook. There's an Open XML Theme Builder application available on CodePlex, which introduced new features such as Theme Variants in PowerPoint, but it hasn't been updated since 2009 and so probably won't work with Office 2013.

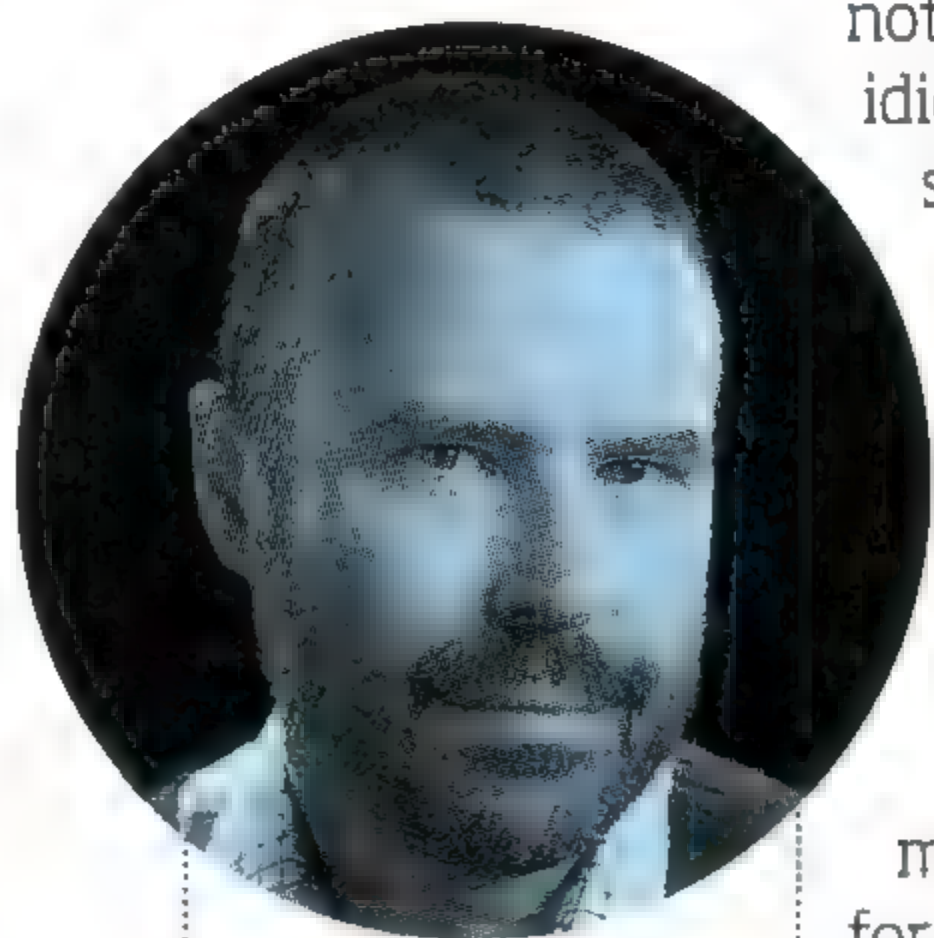
Visual Studio 2012 has a UI Theme Editor add-in that enables you to change the colour scheme from the default grey to any colour of your choice. You can't change the grey icons, but you can make the rest of the UI more bearable and distinct from your application and code. If Microsoft made such an add-in available for Office 2013 it would please a lot of the critics, myself included, who find the bright white or bland grey so unappealing.

One feature that has been removed from Office 2013, much to my disappointment, is the ability to add AutoCorrect entries directly from a misspelled word. Previously, when you right-clicked a misspelled word you could choose to correct the word, add it to the dictionary, or click AutoCorrect to correct the spelling, so it would always correct that particular



misspelling from then on. This was handy for mistakes that were being made often, in that you could easily notify Word to compensate for this idiosyncrasy. Without this right-click shortcut, however, you now have to go to File | Options | Proofing | AutoCorrect Options and enter the word pair manually, which, needless to say, is a right pain in the posterior and just won't get done, so you'll end up wasting more time correcting common mistakes that Word used to correct for you.

I can't think of any good reason for Microsoft to have removed this feature: it's "simplified" it right out of existence. I had hoped it was just an oversight in the Preview, but it appears to have gone for good, because you can't customise the right-click menu. The best you can



**SIMON JONES**

An independent IT consultant specialising in Office Automation, Visual Basic and SQL Server.

Custom XML controls in Word are now much more useful – and about time too

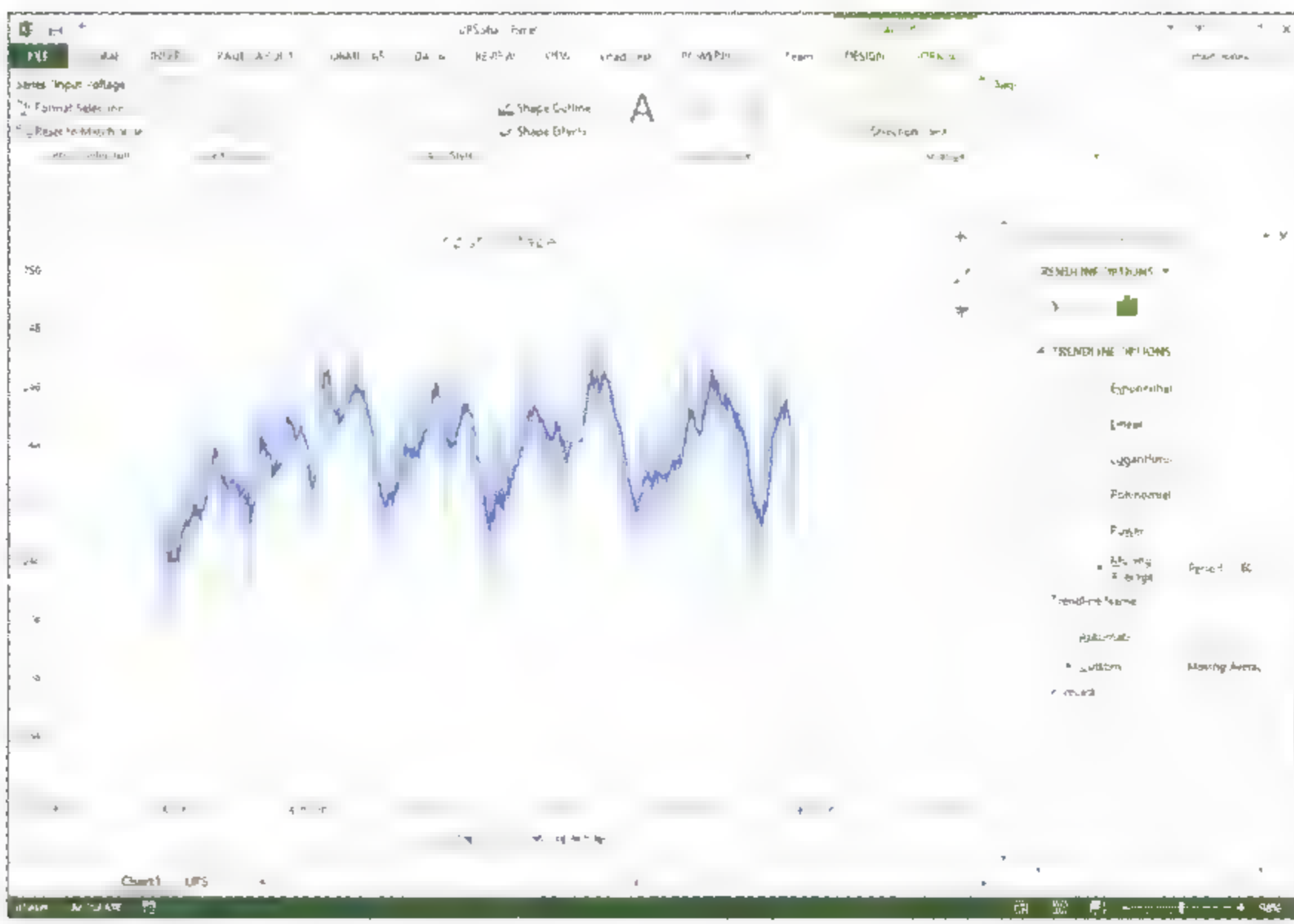
manage is to put the AutoCorrect Options command onto the Quick Access Toolbar so at least you don't have to go round the houses via File | Options. Two AutoCorrect Options commands are presented when you go to customise the QAT or the ribbon: the one without an icon is the full dialog, while the one with an icon is the simplified dialog without access to the "AutoFormat As You Type" and "Math AutoCorrect" pages.

## WORD 2013 CUSTOM XML IMPROVEMENTS

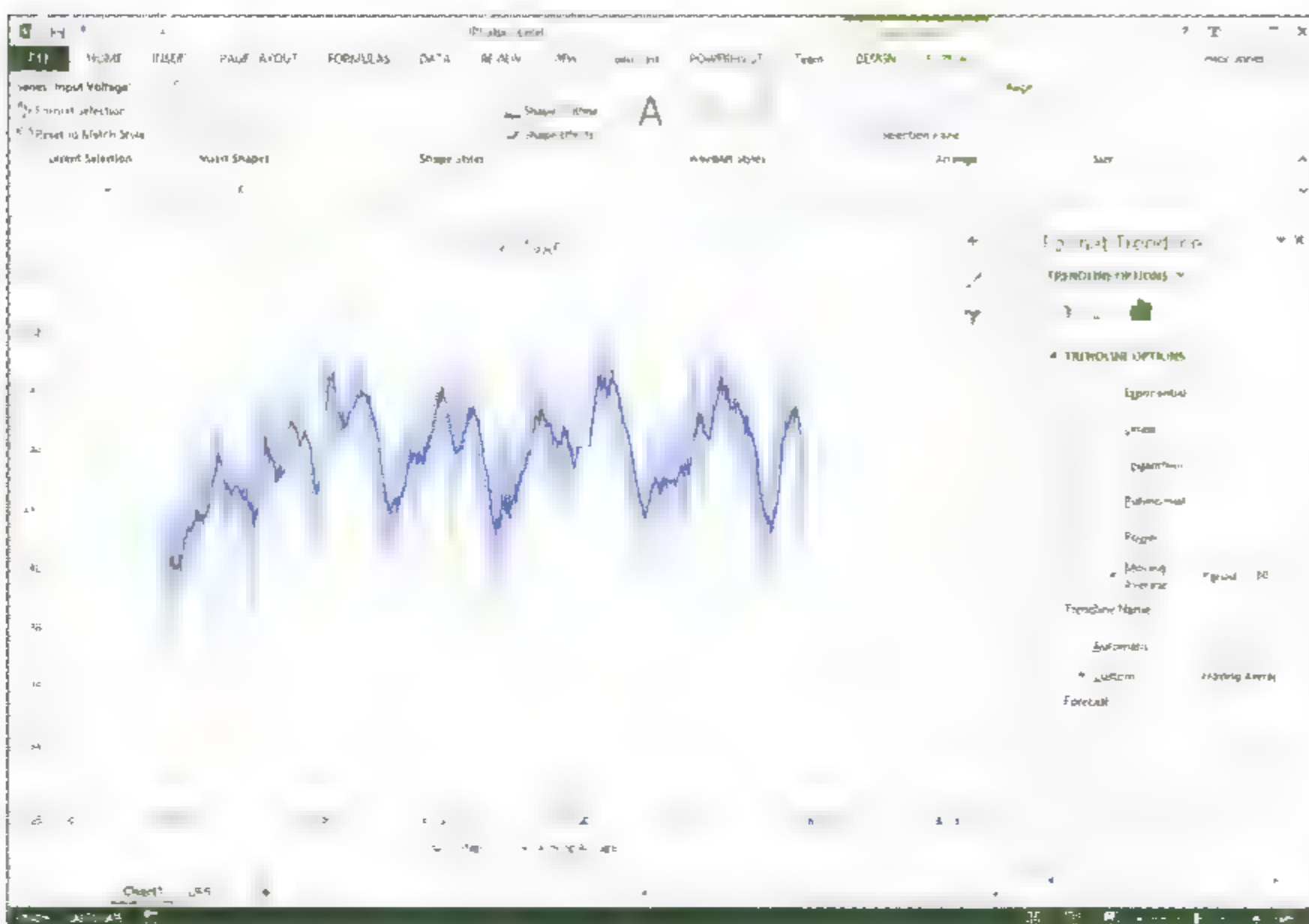
Word's Custom XML features have been used by enlightened companies ever since Word 2007 to help automate document production. They enable Word documents to collect and show structured data from more formal systems, such as line-of-business databases, by embedding XML packets of data into the document and surfacing that data through content controls. This can be used, like document properties, to push data up to SharePoint and other systems, but also to pre-populate documents with data as they're created – for example fetching a customer's name and address from a central database and pushing it into a letter, rather than forcing the writer to type this data again and make the inevitable spelling mistakes. Other applications can get at the Custom XML data in Word documents without having to automate Word to do so – they simply treat the DOCX file as a zipped archive (which it is), then open the ZIP package and read or write one or more of the XML files it contains. Microsoft makes all the methods necessary to manipulate the packages available through the Open Packaging Conventions libraries in the .NET Framework, or you can write your own routines based on any library that supports ZIP files.

Word 2013 brings a couple of major enhancements to this system, including one to fix a major omission that's bugged any developer who's ever tried to use Custom XML parts before. At last Microsoft has added a Repeating Section content control so that you can show/enter whole tables of data into Word rather than only isolated fields from a single entity. There were workarounds – kludgy programming tricks to make rows repeat to show a table of data, such as invoice lines – but no built-in mechanism to do this or let the user

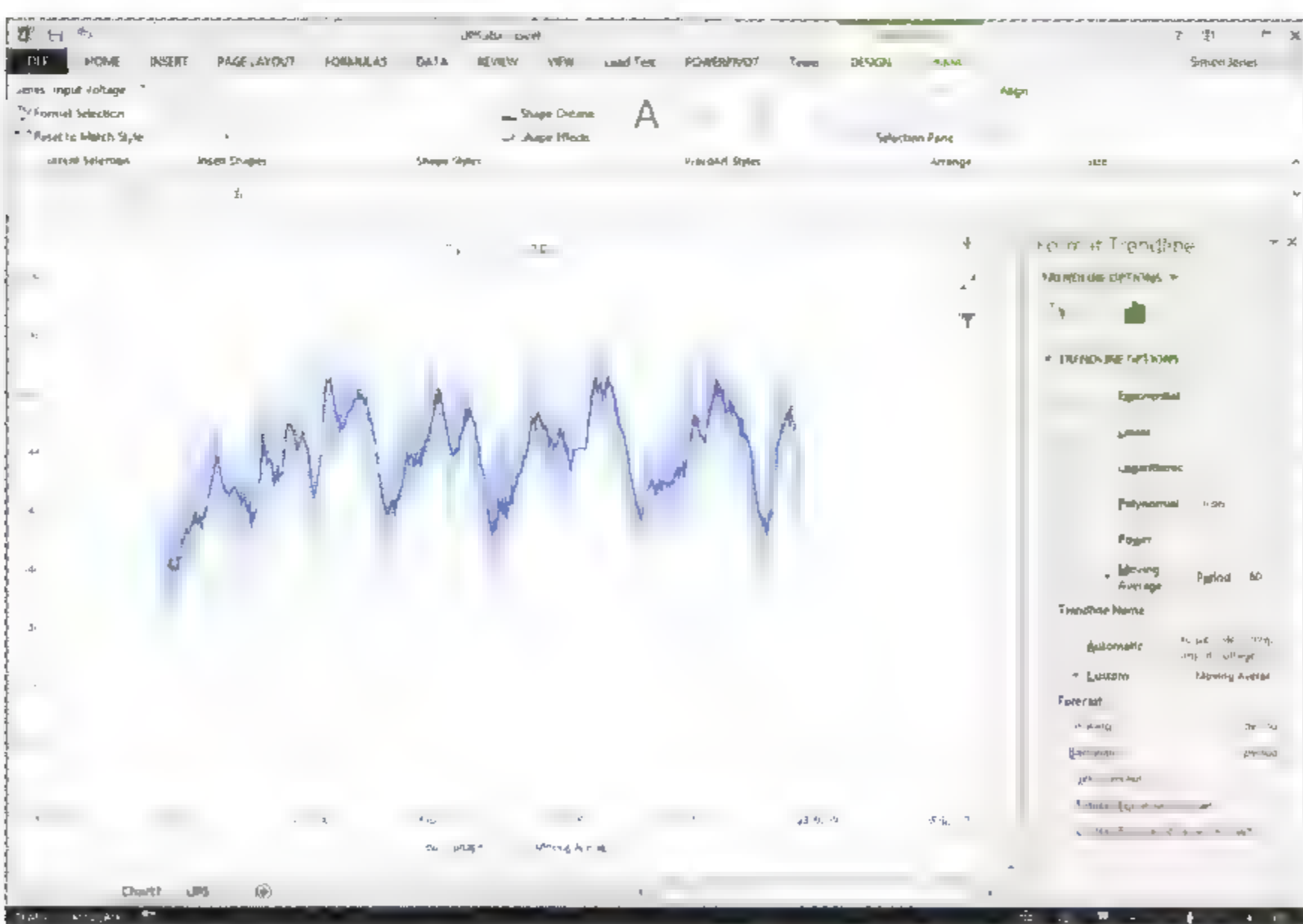




The blinding White colour scheme shows little or no distinction between the document and tools



The boring Light Grey scheme is little better, but the status bar is less obtrusive



The dead Dark Grey scheme is hardly dark. Notice how the add-in tabs on the ribbon aren't capitalised

type repeating data and have the document collect it in a structured way to be passed on to a database system. The Repeating Section content control can surround a paragraph or a table row that contains text and other content controls. It will automatically repeat itself for every entity in its XML packet, and the user can add new entities by clicking the blue "+" sign present on the last row, or delete an entity by using the right-click menu.

There's a new rich-text content

control that allows text within it to be formatted and preserves that formatting by serialising it into the XML data. You can now choose how to show each content control – with an outline bounding box, start and end tags, or with no visual indication – and you can also choose the colour of the outline or tags. You can set this colour in the ContentControlOnExit event for sophisticated conditional formatting. However, I prefer to use the outline style for content controls, since it disrupts the layout of the document less but still lets the user know when they're reading or writing structured data.

Another new feature is the XML Mapping Task Pane, which lets you add a custom XML part to your document and then insert content controls, or map existing content controls to that data. You can use an XML definition file typed in Notepad, or one output from another system to use that system's data definition. Once you've added the custom XML to your document, simply right-click the nodes in the XML Mapping Task Pane and choose Insert Content Control and the type of content control you want to use at any place in the document. Use the Developer | Controls | Properties command on any content control to pop up the Properties dialog and set more options such as the title and colour of the control.

The XML Mapping Task Pane in Word 2013 obviously owes its existence to a CodePlex project of the same name for Office 2007 and 2010; if you want these features for earlier versions then you can download that tool for free from <http://xmlmapping.codeplex.com>.

## OFFICE 2013 BUGS

There are a few known bugs in Office 2013 that may trip you up, and Microsoft's list of known issues marks bugs as applicable only to the Preview code, despite some still being present in the release version. Here are some of the more common ones:

- Outlook 2013 doesn't show its Jump List when you right-click its taskbar icon. To fix this, unpin Outlook from the taskbar, close Outlook and delete the Registry key HKey\_Current\_User\Software\Microsoft\Office\15.0\Outlook\Setup. Open Outlook again and re-pin it. This bug is annoying as it can keep recurring even after you think you've fixed it.
- File | Share | Send As Attachment doesn't work if you have Outlook 2013 installed alongside an earlier version. To get around this, close

I'd be impressed if it was honest enough to say 'that's just the way we designed it'

the earlier version or create a new message and use Insert | Attach File instead. This bug applies only if you use the Office 365 Click-To-Run installer for Office 2013. Using the standard MSI installer will force you to remove any earlier version of Outlook.

Microsoft lists several workarounds for these bugs that boil down to variations of that tired old joke, "Doctor, Doctor, it hurts when I do this"... "well don't do that, then". For instance, Microsoft's advice on the problem "Error when connecting to Exchange 2003" is "Workaround: Outlook 2013 isn't supported on Exchange 2003 and connectivity is blocked. Please connect Outlook 2013 to Exchange 2007, 2010 or 2013". This isn't much use unless you're a system administrator with the money, time and authorisation to upgrade your company's Exchange server. I'd be more impressed if the company was honest enough to say "that's just the way we designed it".

Exchange 2003 is ten years old, long out of mainstream support and, as with previous versions, Microsoft is using the release of a new version of Office to push people into updating its other ageing systems as well. If this comes as a surprise, you'll be shocked to learn that Office 2013 won't run on Windows XP or Vista, either. The list of known bugs, or rather the ones that Microsoft is confessing to (with their hilarious workarounds), can be found at <http://tinyurl.com/bu5rg5l>.

## OFFICE 365

If you don't want to go to the expense and hassle of installing and running a new Exchange server then Microsoft will be very pleased to sell you subscriptions to Office 365, where it will take care of most of that for you, provided you have enough internet bandwidth to support it.



# DVD CONTENTS

GAMES, ESSENTIALS, FULL SOFTWARE, DRIVERS & MORE!

**E**ach issue, we aim to provide all *PC & Tech Authority* readers with a full suite of simple yet important applications, along with a variety of extended trials and full programs that are both useful and interesting.

This month, we're featuring a visually unique defragging tool that both keeps your system in good shape, and also keeps you entertained while it works.

Our games this month are the quirky *Street Fighter vs Megaman*, and the retro-cool *Iron Sky: Invasion*. On the Linux front we have Linux Mint, which we're sure you'll enjoy.

That's it for this month – as always, please send any feedback and suggestions to [dvd@pctechauthority.com.au](mailto:dvd@pctechauthority.com.au)

We'd love to hear any suggestions you have for improving our DVD.

This month we're offering Ashampoo Magical Defrag 3, which will keep your drives in tip-top shape, in a colourful and unique way! Plus Linux Mint, a handy and elegant operating system.



## Ashampoo Magical Defrag 3

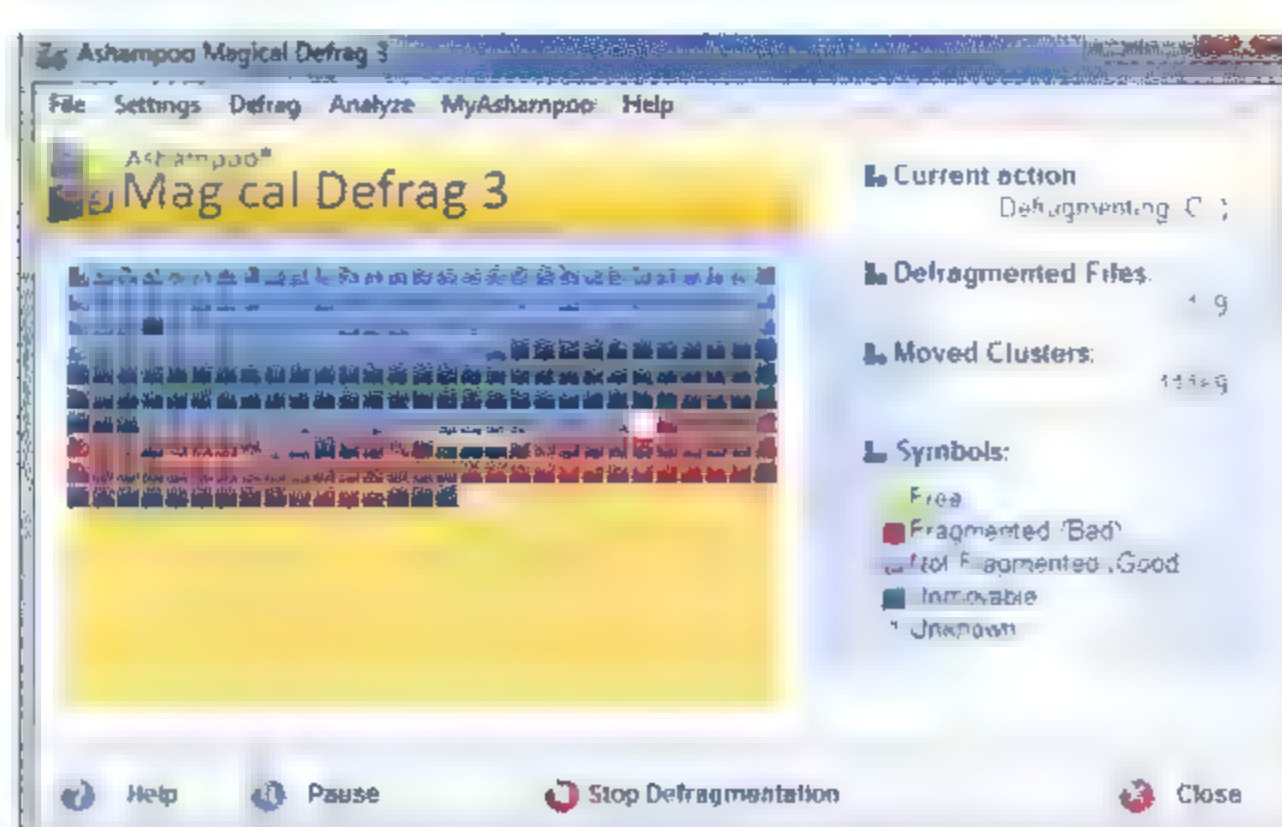
**Free of charge after registration**

**Link:** [www.ashampoo.com/products/0244](http://www.ashampoo.com/products/0244)

When was the last time you defragmented your hard drive? Can't quite remember? Then join the ranks of many users that shy away from the time-consuming defragmentation of their hard disks. Over time, hard drives get fragmented due to half-hearted maintenance, resulting in a significantly measurable performance loss. This is where Ashampoo Magical Defrag 3 steps in. The program runs as a background service and defragments your hard drive only when the computer is idle, hence enabling you to follow your everyday work routine without any distraction.

Ashampoo Magical Defrag 3 basically runs on the principle "install and forget", and yet also offers an extensive set of options. The program's Job Administration provides you

with multiple defrag jobs that can each be configured individually and a job scheduler offering editable time settings for each job. With Defrag Now you are able to start a non-stop defragmentation with just a single mouse-click. In addition, you can also spontaneously start any preset defrag job, irrespective of the predefined time schedule, by just pressing Start Job. Another program feature is the SSD protection that hinders the software from involving SSDs in the defragmentation process. Due to their specific design, SSDs do not need to be defragmented and wear out much faster if you do continue to defragment them anyway. The integrated Screensaver allows you to keep track of the defragmentation progress even while taking a break and comes with different designs that bring life to an otherwise purely technical process.





**DID YOU KNOW?**

You can find a guide to using ISO files in the Editorial section

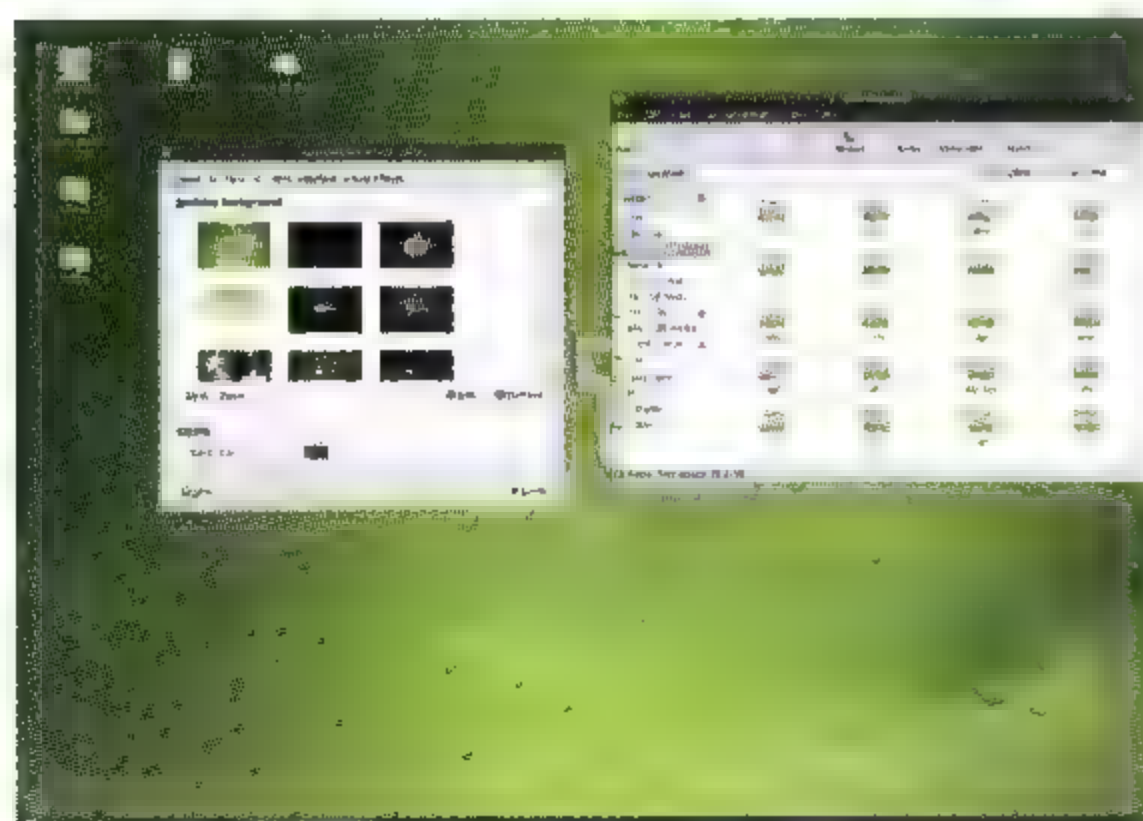
**Plus! Linux Mint**

The purpose of Linux Mint is to produce a modern, elegant and comfortable operating system which is both powerful and easy to use.

Started in 2006, Linux Mint is now the 4th most widely used home operating system behind Microsoft Windows, Apple Mac OS and Canonical's Ubuntu.

Some of the reasons for the success of Linux Mint are:

- It works out of the box, with full multimedia support, and is extremely easy to use.
- It's both free of cost and open source.
- It's community-driven. Users are encouraged to send feedback to the project so that their ideas can be used to improve Linux Mint.
- Based on Debian and Ubuntu, it provides about 30,000 packages and one of the best software managers.
- It's safe and reliable. Thanks to a conservative approach to software updates, a unique Update Manager and the robustness of its Linux architecture, Linux Mint requires very little maintenance (no regressions, no antivirus, no anti-spyware...etc).



GAME DEMO

**Iron Sky: Invasion**

"Iron Sky: Invasion" is a space fighter simulator, calling to mind such classics as the legendary... You-Know-Which series, further enhanced with strategy and RPG elements. The core of the gameplay is based on ship-to-ship dogfights, combined with assaults on giant spaceships (such as the Siegfried-Class Zeppelins), as well as tactical thinking and resource management.

**PC  
& TECH  
AUTHORITY**

# DVD CONTENTS

## No 184 / March 2013

**SOFTWARE:** Ashampoo® Magical Defrag **WINDOWS:** 7Zip • CCleaner • Defraggler • Foxit Reader • Apple iTunes • Malwarebytes Anti-Malware • Sandboxie • Songbird • Spybot Search & Destroy • VLC Media Player • WinRAR • WinZip • Avast Free Antivirus • AVG AntiVirus Free Edition 2011 • PC Tools AntiVirus Free **INTERNET:** AOL Instant Messenger • Vuze • Google Chrome • Feed Reader • Filezilla • Internet Explorer • Microsoft Security Essentials • Mozilla Firefox • Mozilla Thunderbird • Skype • ZoneAlarm **DRIVERS:** ATI • Nvidia • DirectX • Realtek Audio Codecs • VIA HyperionPro drivers **LINUX:** Linux Mint **GAMES:** Iron Sky: Invasion • Street Fighter x Megaman **EDITORIAL:** Burning an ISO image

**INSTRUCTIONS:** Open Windows Explorer, navigate to your DVD drive and double-click Index.html in the root directory. **DISC PROBLEMS:** To replace faulty DVDs, please send the discs to: PC&Tech Authority DVD Replacements, R50 Victoria St, McMahon's Point NSW 2060

Make sure to include your name and postal address on the back of the package so that we know where to send the replacements. For all other DVD related issues email [cd@pcauthority.com.au](mailto:cd@pcauthority.com.au). As the delivery platform only, PC&TA and Haymarket Media cannot and will not provide support for any of the software or data contained on these discs. Although all discs are virus scanned, Haymarket Media cannot accept any responsibility for any loss, damage or disruption to your data or computer system that may occur while using the discs, the programs or the data on them. There are no explicit or implied warranties for any of the software products on the discs. Use of these discs is strictly at your own risk.



# How secure is your Wi-Fi network?

**DAVEY WINDER** WARNS ABOUT NEW WI-FI VULNERABILITIES AND QUESTIONS THE ADVICE OFFERED BY SECURITY VENDORS

It shouldn't need saying today that the WEP and WPA protocols used to secure Wi-Fi connections are notoriously unsafe, but now it appears that the Wi-Fi Protected Setup (WPS) protocol has been well and truly compromised too.

"WP what?" I hear you mutter. It's just that button you probably pressed to secure your wireless router when you set it up for your home or small-business network, the one that did away with manual security configuration and made wireless security so simple and quick. Or so you believed. The truth is rather less certain, because WPS is vulnerable to attack, although not through its big red button. A different aspect of WPS is an eight-digit PIN you have to enter instead of pressing that button, and it's this PIN version of the protocol that's been shown to be much less secure than everyone had assumed.

It seems that in order to crack the encryption via standard brute-force attack, hackers don't need to uncover all eight digits of that PIN – which would take quite a lot of time and computing resources – but have to decipher only the first four. That secure-looking PIN isn't actually so secure after all. Sure, some ATM cards employ a four-digit PIN, and both banks and customers seem happy enough to place their trust in that when placing it in an ATM, but there's a big difference between these two seemingly identical authentication scenarios. To take your money out of an ATM, any would-be villain has to be both in possession of your physical card and able to guess or otherwise get hold of your PIN. To gain access to your supposedly secure wireless network, however, they don't need physical access to your router, computer or anything; they can just set their own computer loose on trying every possible combination.

There's a useful "how long to crack my password" calculator – called Haystack – at the Steve Gibson GRC security site (<https://www.grc.com/haystack.htm>), which is accurate enough for a rough estimate, although the maths boffins will tell you that it's far from perfect.

Users are the real problem, rather than the malicious programming code



**DAVEY WINDER**

Award-winning journalist and small-business consultant specialising in privacy and security issues.

The trouble is, security researchers have now released a tool called Reaver that can exploit this imperfection to enable anyone to crack the more simple WPS PIN and access the clear-text version of your router's WPA2 Pre-Shared Key (PSK), which is then revealed as a result. The full eight-digit PIN would have more than 100 million combinations, whereas the reduced-digit PIN has only 11,000 or thereabouts. It matters not one jot how complex the PSK lying behind the PIN is, because by using the WPS method you're in effect "protecting" your Wi-Fi network with a simple four-digit PIN.

A quick Google search for PSK-hacking tutorials will demonstrate that even without this WPS PIN vulnerability, it's feasible to brute-force crack the PSK itself, but it takes so much longer that any prospective hacker would need a special reason to invest such time and resources into attacking your router. Reduce the time and resource requirement, however, and all of a sudden your router and Wi-Fi network become much more attractive as casual hacking opportunities.

It isn't all bad news, though, since you can simply disable the WPS feature on your router, thereby removing the PIN that tools such as Reaver will be looking for. I understand, but at the time of writing have no actual details to back this up, that a number of router manufacturers have either released or are working on firmware updates to close the vulnerability (one assumes, by turning off the PIN – something for which not all routers have a user-configured option). Better still, start from scratch and set up your Wi-Fi network again using a really long and complex PSK to make those brute-force attacks impractical – think in terms of 32 characters or more, with the usual mixture of letters, numbers and special characters. Gibson's Haystack calculator that I mentioned previously will show that a simple four-digit PIN takes only a few seconds to crack, and with a powerful enough computer attack it will submit in an instant. That same calculator will tell you that a

complex 32-character password would take 6.22 thousand trillion, trillion, trillion centuries to crack, even in the worst-case scenario attack using a massive processor array capable of a hundred trillion guesses a second!

WPA2 PSK, the pre-shared key implementation beloved by our stereotypical dangerous small-businessperson, was cracked a couple of years ago now, while WPA2 and TKIP are no longer secure options either. For many people Wi-Fi is quite simply wide open. WPA2 AES is still okay, as is WPA2 Enterprise with a RADIUS authentication server, and even WPA2 PSK with that 32-character key should be safe enough. WPA2 PSK actually supports passwords up to 63 characters, and since most wireless devices nowadays cache the password forever so you only have to enter it once, it isn't exactly rocket science to work out what you ought to be doing. Yet long passwords are still all too often seen as unnecessary and too complex. Sigh...

## USER-CENTRIC THREATSCAPE

It should come as no surprise to readers of this column that I believe the majority of IT security problems are better described as organic rather than mechanical, by which I mean that the users are the real problem rather than the malicious programming code or the bots that distribute it. And according to the latest security threat report from Sophos, it would appear that, at long last, people are starting to get that message, too.

I was phased, though, when an IT security vendor recently seemed to be suggesting that any business that publicly reveals its email address is somehow compromising its data security and putting itself at risk. I do understand that all risk is relative and that an exposed business email address must by definition create more of a corporate data security risk – from social engineers, phishers, hackers and cybercriminals – than if no such email contact points were ever disclosed. However, I also understand that the dictionary definition of an





GRC's Interactive Brute Force Password "Search Space" Calculator

No Uppercase No Lowercase 4 Digits No Symbols 4 Characters

1234

Enter and edit your test passwords in the field above while viewing the analysis below

**Brute Force Search Space Analysis:**

Search Space Depth (Alphabet):	10
Search Space Length (Characters):	4 characters
Exact Search Space Size (Count): (count of all possible passwords with this alphabet size and up to this password's length)	11,110
Search Space Size (as a power of 10):	$1.11 \times 10^4$

**Time Required to Exhaustively Search this Password's Space:**

Online Attack Scenario: (Assuming one thousand guesses per second)	11.11 seconds
Offline Fast Attack Scenario: (Assuming one hundred billion guesses per second)	0.000000111 seconds
Massive Cracking Array Scenario: (Assuming one hundred trillion guesses per second)	0.000000000111 seconds

"address" is a place where a person or organisation can be found to communicate with, and that's just as valid for an email address as a street one. The whole point of having a business email address is to enable people, both potential as well as existing customers, to get in touch with you, and there's no point in having such an address if you don't let anyone know what it is.

So what were the folk over at the Websense Security Labs on about when they informed me that "thousands of businesses and consumers are putting themselves at risk each day by publicly revealing their email addresses on Twitter". The company argued that because such addresses are "connected with their inboxes, social media identities and bank accounts", it leaves business users exposed to the potential for "advanced social spear-phishing attacks." The bizarre conclusion to WebSense's advice was that employers should "re-evaluate acceptable-use policies to discourage staff from sharing email addresses on Twitter".

I think that in this particular case, this overly-protective security vendor was well intentioned and perhaps just got carried away with the email security risk message. Yes, there are people out there with bad intentions who will, and indeed do, target business users on social networks in order to infiltrate networks using the old social-engineering strategy known colloquially among security types as "spearphishing", because the attack is aimed at one individual within a specific department, rather than employing a scattergun approach by attempting to place a remote access trojan or similar malware inside the corporate network. By concentrating upon one individual, especially one who is active on Twitter or Facebook, it's sometimes possible to build up an accurate profile of that person, both personally and, more importantly, professionally.

For example, assuming the targeted person hasn't opted to make information

Hacking calculators such as Haystack should help frighten you into taking password construction more seriously

available only to friends, it's all too easy to quickly scan their friends list and compile a dossier of their work colleagues and customers. Apply this to the conversations posted on the target's Facebook Wall to extract their business email addresses, and the bad guys now have all the necessary components they need to impersonate someone already known to that employee, and to exploit the basis of trust by attaching an "important document", or a link to something they "may be interested in", and hence provoke the click that will install the malware.

So, yes, I can see where the Websense chaps are coming from, but I'm afraid it all reminds me too much of Chicken Little. The sky will not fall in if you post your business email address on Facebook, and acceptable-use policies shouldn't be altered to make doing so a hanging offence. Apart from anything else, it's easy to guess these specific email addresses, given the standard address formats employed by just about every company. Tracking down which one is actually correct is just a matter of visiting the company's website and taking a quick peek at the "about us" page, or the list of contacts for their directors or sales executives.

In other words, telling your staff not to publish an already public email address on a social network is akin to standing in front of the sea and ordering the waves to retreat. Far better instead to address the real problem, which is once more that of user education. Ensure that your employees are aware of the kind of phishing techniques being used online, of the dangers of trust by association when using social networks, and why it's important not to become a link-clicking nutjob.

One way to do this, which appeals to the geek in me, is to use the Simple Phishing Toolkit (SPT), which isn't quite as dangerous as its name suggests. This open source toolkit makes it easy for a business to test just how phishing-aware its employees are, by creating the kind of lures that the bad guys are going to use and then deploying them to send less-security-savvy staff to a cloned decoy site you've set up using the supplied site-scraper tools. The idea

is that this makes it possible to phish yourself, then to peruse a bunch of logs that will record which links have been clicked by whom - information that you can then use to target your training sessions at the employees who most need it.

Here's what the SPT developers have to say about it: "The SPT project is an open source phishing education toolkit that aims to help in securing the mind as opposed to securing computers. Organisations spend billions of dollars annually in an effort to safeguard information systems, but spend little to nothing on the under-trained and susceptible minds that operate these systems, thus rendering most technical protections ineffective. A simple, targeted link is all it takes to bypass the most advanced security protections. The link is clicked, the deed is done. SPT was developed from the ground up to provide an easy-to-use framework to identify your weakest links so that you can patch the human vulnerability."

If you can identify which of your employees are most at risk of falling for phishing scams, then you can educate them and reduce the possibility of this happening. And before you say it, yes there will be some people who will use such a toolkit for evil. However, open source phishing toolkits aren't new and existing resources such as Metasploit, which offer far more complex and advanced phishing opportunities, are already exploited by the criminal fraternity. SPT doesn't even have a data capture function, which reduces its utility to bad guys enormously. What it does have is the potential to be a great in-house resource for teaching employees what not to do. See for yourself at [www.sptoolkit.com](http://www.sptoolkit.com).

The SPT dashboard makes starting an in-house phishing awareness exercise easy

## UNSAFE

Research by YouGov suggests that 56% of public Wi-Fi hotspot users in the UK don't check whether the network is secure before connecting, while 86% of them do **secure home wireless networks**. Furthermore, 42% said they'd use hotspots more if security was guaranteed, and 40% "worry" about bad guys snooping on their communications when using them. Nevertheless, 14% actually used public hotspots for banking, while 15% had used them to buy items using credit or debit card! Wireless networking isn't that secure right now, so wireless providers need to do more to make their public hotspots safer.



# Office pollution in a changing atmosphere

**JON HONEYBALL** ARGUES THAT SMALLER, MORE NIMBLE RIVALS ARE INCREASINGLY SHOWING MICROSOFT THE WAY IN TERMS OF FLEXIBILITY AND SUPPORT

Last month I raised the ugly question of "what is Microsoft Office?", when I pointed out that we now have various versions of the suite named the same thing but with different functionality and capabilities. This has occurred because of the weak porting of Office Home & Student that is bundled with the Microsoft Surface with Windows RT tablet. It's lacking Visual Basic for Applications, the scripting language that's a cornerstone of much business use of Office. The Intel version of Office Home & Student has this capability, as indeed do the "full fat" versions available on Intel. Even worse, the licence supplied with the version of Office RT installed on Microsoft's Surface specifically precludes it from being used in a production environment.

Microsoft has been polluting the name of Word, Excel and the rest of the suite for years, but this pollution was mostly constrained to the Windows Phone environment, where I suspect that many users were happy to accept that a "free" bundling of something called Excel on a tiny phone display wasn't going to deliver the goods of the grown-up version. Indeed, back then, you didn't even get proper round-tripping of your documents – in other words, if you created a document on the desktop version of the app, moved it into the phone and then saved it out and moved it back to the desktop you'd find lots of document features were missing. This situation has been improved considerably in recent times, much to everyone's relief.

Maintaining this round-trip ability has been important for Microsoft's web-based Office suite of applications. Built to counter the threat from Google Drive, Microsoft has done a good job of creating lightweight versions of Office tools that actually look and work pretty well the same as the full versions. Once again, many users are happy to accept that an application running in your web browser isn't going to have the same abilities as a desktop app: context is everything.



**JON HONEYBALL**  
Computer journalist and consultant specialising in both client/server and office automation applications.



With access to key Microsoft file formats, someone could port LibreOffice to iOS and Android

As Microsoft moves away from its core Windows 32-/64-bit platform, and especially into the non-Windows tablet area, it faces an interesting problem. The reality is that it can, if it so wishes, deliver a full-powered experience. Anyone who believes that ARM-based iPads or Android devices aren't "up to the job" should take more note of what's happened over the past decade. Cast your mind back to the late 1990s and remember that we were running on what were by today's standards fairly slow processors. If they could run "full fat" Office then it should be even more do-able on today's chips.

However, Microsoft's chosen play is almost certainly going to be either to try to tie the applications to an Office 365 licence, or else to make them "companions" to a full desktop licence – it's entirely possible that they won't be sold as standalone applications at all. You'll still download them, of course, through the appropriate app store, but the licensing key to activate them will be in Microsoft's control. It might even be that the downloaded application can do a file open, edit and

print, but can't save, an approach that has a long pedigree in the shareware products of the past; purchase and apply an Office 365 or desktop app licence and those vital locked-down functions will be unlocked. We'll see in the next few months how Redmond wants to play this.

But it's worth remembering that Microsoft's position is considerably weakened compared to a decade ago. Back then, the file formats for Word, Excel and so forth were locked up as tight as corporate secrets. Want to know how the binary interchange file format (BIFF) worked in Excel? Sign this non-disclosure agreement and licence, please. And that was only the start of your problems. In those days, Microsoft was using a rather lovely technology called Structured Storage, where each individual file encapsulated an entire file system: if you peered inside there was no difference between a DOC file and an XLS file: both had the same structure and had various streams of data in them. It was just what was in the primary stream that defined it to be a Word document or an Excel spreadsheet.



Why did Microsoft go down this structured storage route? At the time, the world thought that compound documents were the future, where you might want to have a Word document with an embedded Excel spreadsheet or two, and that you'd want to shift seamlessly from one to the other. Getting into a structured storage file to manipulate its pieces required you to write a mass of Microsoft code, which hadn't been and wasn't going to be ported anywhere else, any time soon. With structured storage there was always the promise that we'd move over to a more client-server arrangement, allowing server control of the DOC file, which would in turn enable multi-user concurrent editing of complex documents. However, this promise came to nowt, as the Office team got bored with the idea and the world moved on to HTML and then XML. Add to this a few court cases and the Office team moved to the XML-based DOCX and XLSX family of formats, part of the motive for which was to have open file formats with publicly available specifications.

Over the years there have been a number of attempts to produce a rival suite to Microsoft Office. Some have been paid-for, some have been open source projects. It's certainly true to say that efforts such as LibreOffice ([www.libreoffice.org](http://www.libreoffice.org)) have resulted in strong platforms that offer plenty of features. Fortunately for Microsoft, though, many of its business customers have been tied up in rolling licences, and it's certainly true that many IT managers have shied away from such third-party Office offerings based on the simple reasoning that "no-one ever got fired for buying the real thing".

Is this going to change now? As the world moves away from desktops and towards a plethora of other types of device - from phones, to tablets, to TVs - there's no longer a need for an Office clone. All we need is Office file compatibility, and the move to DOCX/XLSX/PPTX by Microsoft makes it so much easier for a third-party developer to generate a really compelling and interesting new product that just happens to employ the Microsoft file formats.

A great example of this is OneNote. On Windows this is a top-notch product, arguably the best thing that the Office team makes today, especially when compared to the somewhat geriatric Word, Excel and PowerPoint, all of which are now entering their late twenties (which

## Microsoft has done a good job of creating lightweight versions of Office tools

in the computer equivalent of dog years means they're collecting their pensions and staggering around in a Zimmer frame). OneNote's time has come with the arrival of tablets. It's type enabled, pen and ink enabled, can record audio and match pen/ink/type events to time points on the recorded timeline. There's no file saving - that's all done automatically. You can share OneNote books and work on them along with other users. By any standards, it's a thoroughly modern, interesting and worthwhile product.

Microsoft has done an iOS port of OneNote, but to be honest it's a howling dog, with much of the best functionality simply missing, and while it doesn't actually destroy the OneNote file it's working on, it's somewhat galling to find key functions missing. That's why it's so refreshing to find a third party that's building an entirely new OneNote-alike application that works with your OneNote files unchanged, and offers far more functionality than Microsoft offers in its own Mac/iPad product.

It's called Outline (<http://outline.ws>). There are two versions - Outline and Outline+ - and this is a fast-moving company, releasing updates and new functionality every month or so. Outline is limited to 30 pages, syncing over USB, and is free, while Outline+ has no page limit, syncs over USB, Wi-Fi or Dropbox, and costs the princely sum of \$15.99. There's an Outline Enterprise version coming soon that will add native support for SharePoint syncing too, and that will be a "\$\$\$" purchase instead of the "\$" of Outline+.

I've enquired about support for synchronisation over SkyDrive, and have been told that it's coming shortly,

and I've asked for a "hot note" app for the iPhone too. The screen size isn't big enough to handle the full user interface, but a cut-down version that specially marks stuff that is currently important is just what I need. When you travel as much as I do, you constantly need access to plane reservation numbers, flight details, hotel and rental car reservations - store them in a special note in OneNote and my phone can immediately display this for me.

And what about a version for the Mac? That should be out by the time you read this for a mere US\$ 15, and hopefully not much more locally. The first version will be read-only, a sensible move to ensure that there are no major nasties in it - after all, the big problem with any syncing data model is that a bug in one place might propagate across all the clients in no time at all. But at the time of writing, this read/write version is scheduled to arrive within a few weeks.

I'll confess that I love discovering small software companies such as this. They're fast, responsive, open to ideas, and they deliver. Bringing Outline to the iPad in direct competition to Microsoft might be seen as brave, but it isn't - far from it. Microsoft has shown that it's too old, too tired, too big and too slow, and it will be attacked more and more by these low-cost, fast and responsive software developers who can steal its lunch now that the file formats have been opened up. Now who is going to take the LibreOffice codebase and port it to iOS? And to Android? Assuming it would be chargeable, there are tens of millions of potential customers at a tenner each - add that up, and it soon becomes real money. Let battle commence.

Microsoft OneNote is perfectly suited to the touch-friendly interface of modern tablets





## OFFICE 365 AND DEVICES

I was having problems getting a new phone to connect to my Office 365 accounts. Office 365 is one of those services that's so good it's sometimes hard to remember just what an enormous improvement it offers over the tedium, hassle and drudgery of running a local Exchange server. I love Exchange Server and have been running it since the very first betas back in the mid-1990s, but it's something of an elephant in a china shop for a small business such as mine – and increasingly, it would seem, for larger firms too.

But there's one area of Office 365 that's hard to find but crucial to know about when something goes wrong. Log into the Office 365 dashboard, go to Outlook on the top menu, then choose Options | See All Options from the small dropdown at the top-right corner of the screen. This takes you to a configuration window – choose Phone on the left-hand side. Here you'll find a list of all the mobile devices you've set up to work with this Office 365 account: there's a limit of ten devices, and if you change phones often, it's quite likely that you'll hit this limit. It's a hard limit, too, and old devices aren't automatically removed after a set period without a connection. The only way you'll recognise this problem for many devices is that they simply won't set up correctly on Exchange Server connection services. Go to this hidden corner of Office 365 and clear out all the devices you no longer need, then try to set up the email client on the mobile device again – it should work now.

Microsoft says it plans to revisit this limit to see whether it should be increased. Note that there's a limit on the number of devices you can remove within a given time frame, too, so if you keep adding and removing devices at will, you'll find yourself locked out.

### TIP FROM MY TWITTER FRIENDS...

While you're in this area of Office 365, take a look at retention policies under the Organise Email settings. The default for my type of plan is a "two-



The versatile Nikon D800 is capable of outputting uncompressed Full HD video

year move to archive" policy, but should you wish to set up a different policy for a folder or an account, you can do so here, then apply the settings as required.

Now I'll confess that "move to archive" sounds intriguing, especially as I have no idea where the archive is held within the online Office 365 service. I'll have to spend some time prodding at parts of the UI until I turn over the right stone and find it there.

## FILE SYSTEMS FOR STREAMING VIDEO

File systems are tricky things. You want to move things forward and have the very best thinking, design and implementation, but at the same time yearn for backwards-compatibility and the ease of use that comes with ubiquity. New file systems don't come along very often, and when they do they can take some time to gain widespread support. NTFS was first seen in 1992, but ten years later there were still vendors supplying new hardware with the FAT32 file system. FAT16 was definitely of the floppy disk era; FAT32 improved things considerably, but it still had many of the underlying architectural limitations. All of that was fixed by exFAT, but how many digital cameras shipping today actually support exFAT? Precious few, I fear, despite the fact that Windows Vista, 7 and 8 and recent versions of OS X support it in a completely seamless way.

Recently I was in the market for a high-resolution video camera, something that could record at Full HD quality. My eyes fell upon the

Nikon D800 – a DSLR that boasts excellent video capabilities. The advantage for me in particular is that it can take all the lenses I use on my D3X, and it takes stills at the increased resolution of 36 megapixels too. But the problem with the D800 is storage: it has a CompactFlash slot and an SD card slot, but to record Full HD with no compression pushes these technologies to the edge. What's needed is something that can take the Full HD video and store it uncompressed.

Fortunately, the D800 can output uncompressed HD video via its HDMI socket, which is a rare thing among current DSLRs. Enter the PIX 240 from Sound Devices, which is a small, robust, professional-grade video recorder that takes uncompressed Full HD video input and stores it on standard SSDs mounted on the side. But which format to use? Well, FAT32 would be a significant limitation with its maximum capacity of 4GB, while exFAT would be better but there may be licence fees payable to Microsoft. Sound Devices has gone with the UDF file system version 2.5.

Given that the SSD drive is mounted in a cage that includes FireWire 800, eSATA and USB sockets, it should be simple to pull the drive out of the PIX 240 and plug it into a waiting PC or Mac. Turns out that it likes to format the card in UFS format, for which there's now native OS support built into Windows Vista, 7 and 8, and Apple OS X too. Just plug in the drive and it mounts without complaint, and the files are directly editable using any decent video-editing program (I use Final Cut Pro X). The picture quality is significantly better than what you get from the CompactFlash and SD memory cards within the D800 itself.

So, in short, specific technical requirements for file systems aren't as much of a burden as they used to be, and in most cases there's better support out there than you might expect. ■

## NO FUN!

My only significant criticism of Office 365 is that too much of its configuration is rather too awkward to manage for those intermittent users who make up the smaller end of the SMB marketplace. You might well argue that we shouldn't be fiddling in there anyway, and using the services of a reseller who knows all these tricks instead. Maybe so, but where's the fun in that?

On Windows, OneNote is arguably the best thing that the Office team makes today



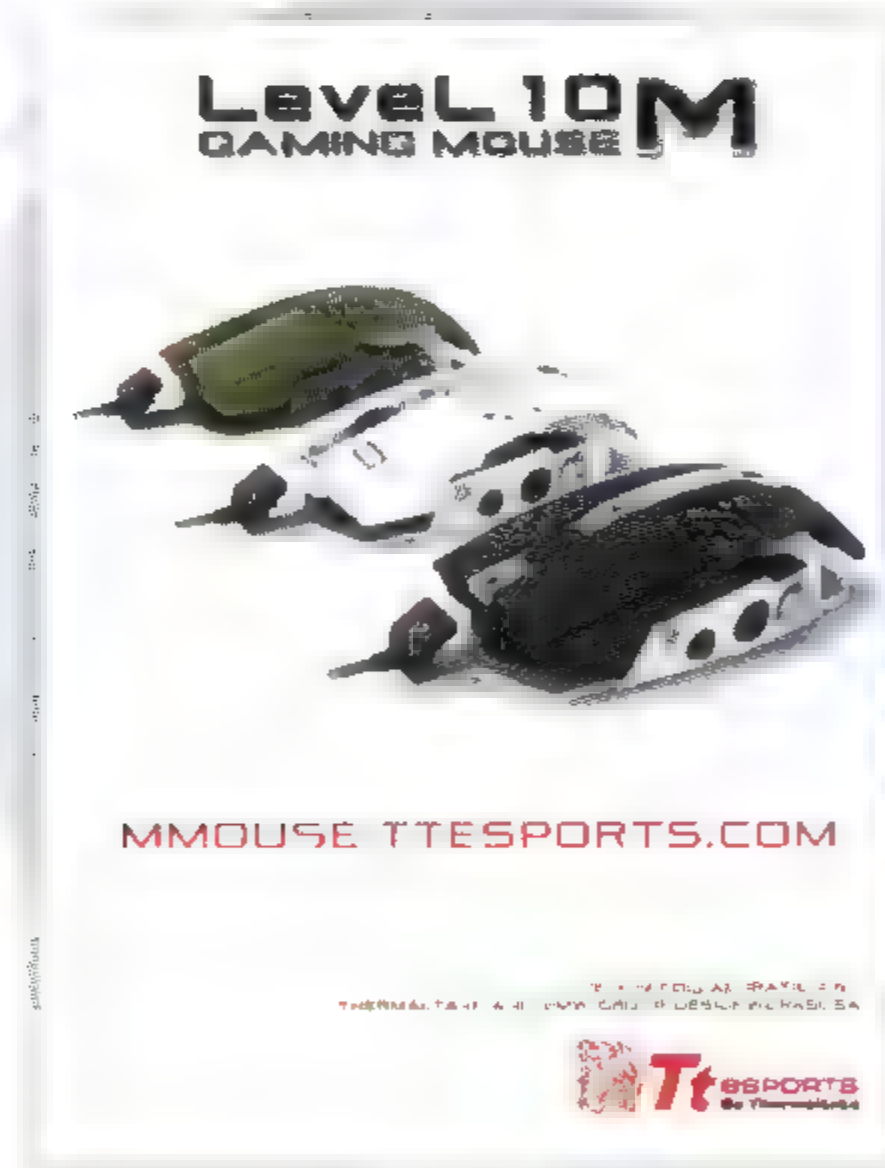
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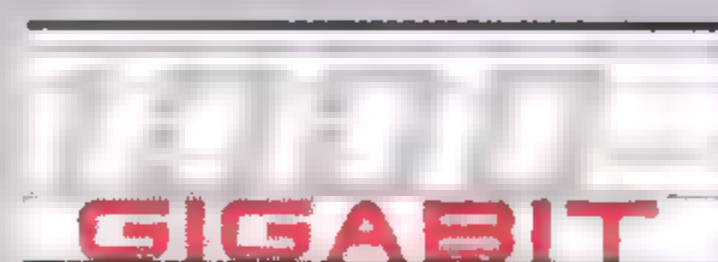


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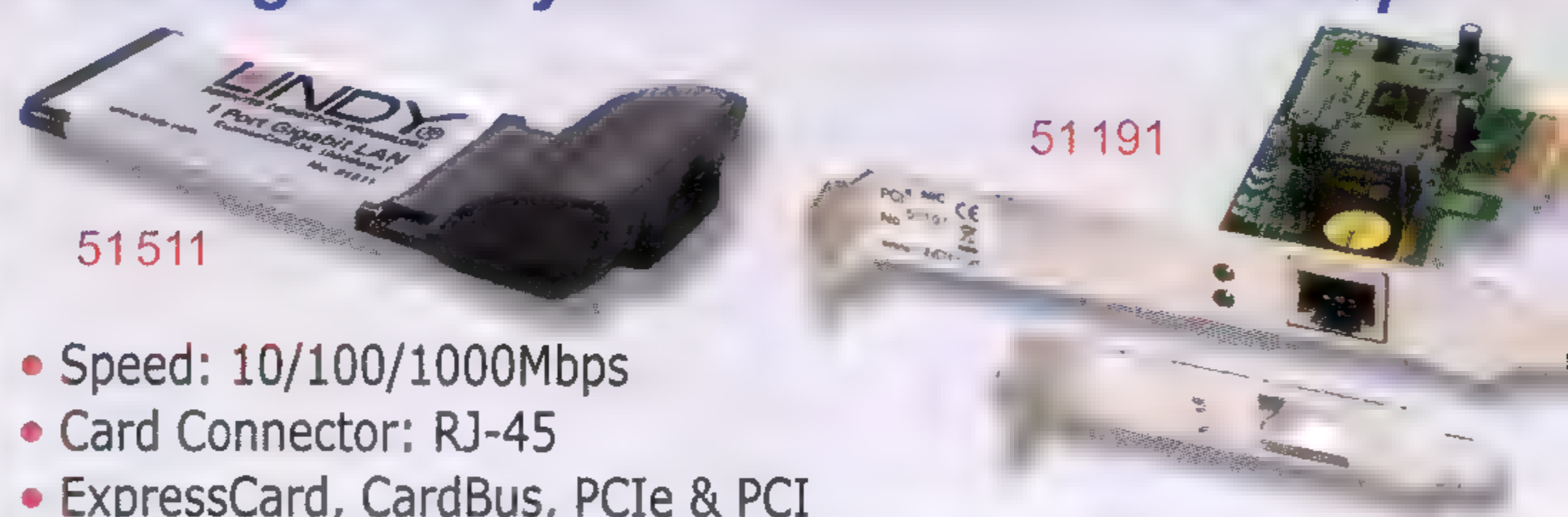
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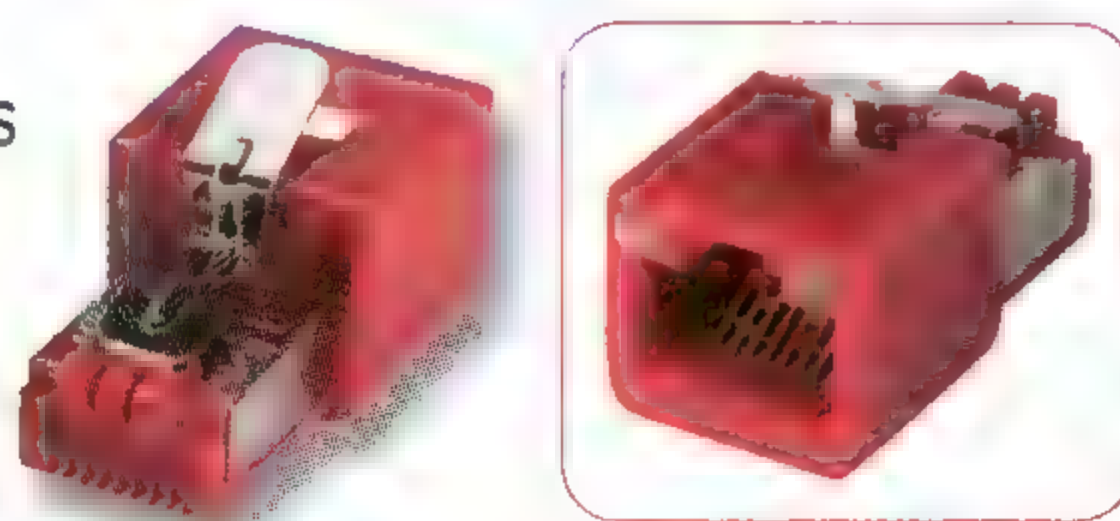
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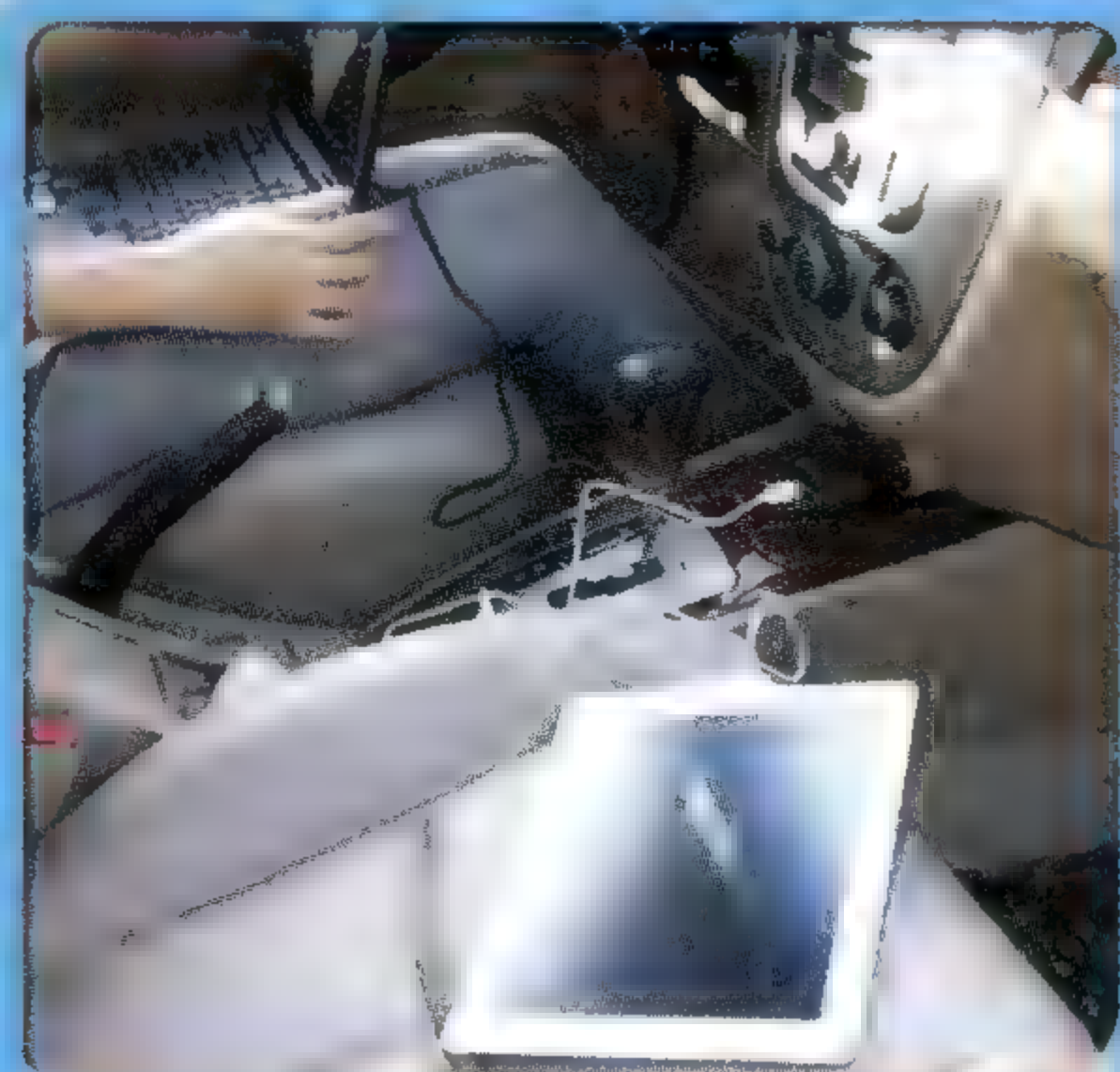
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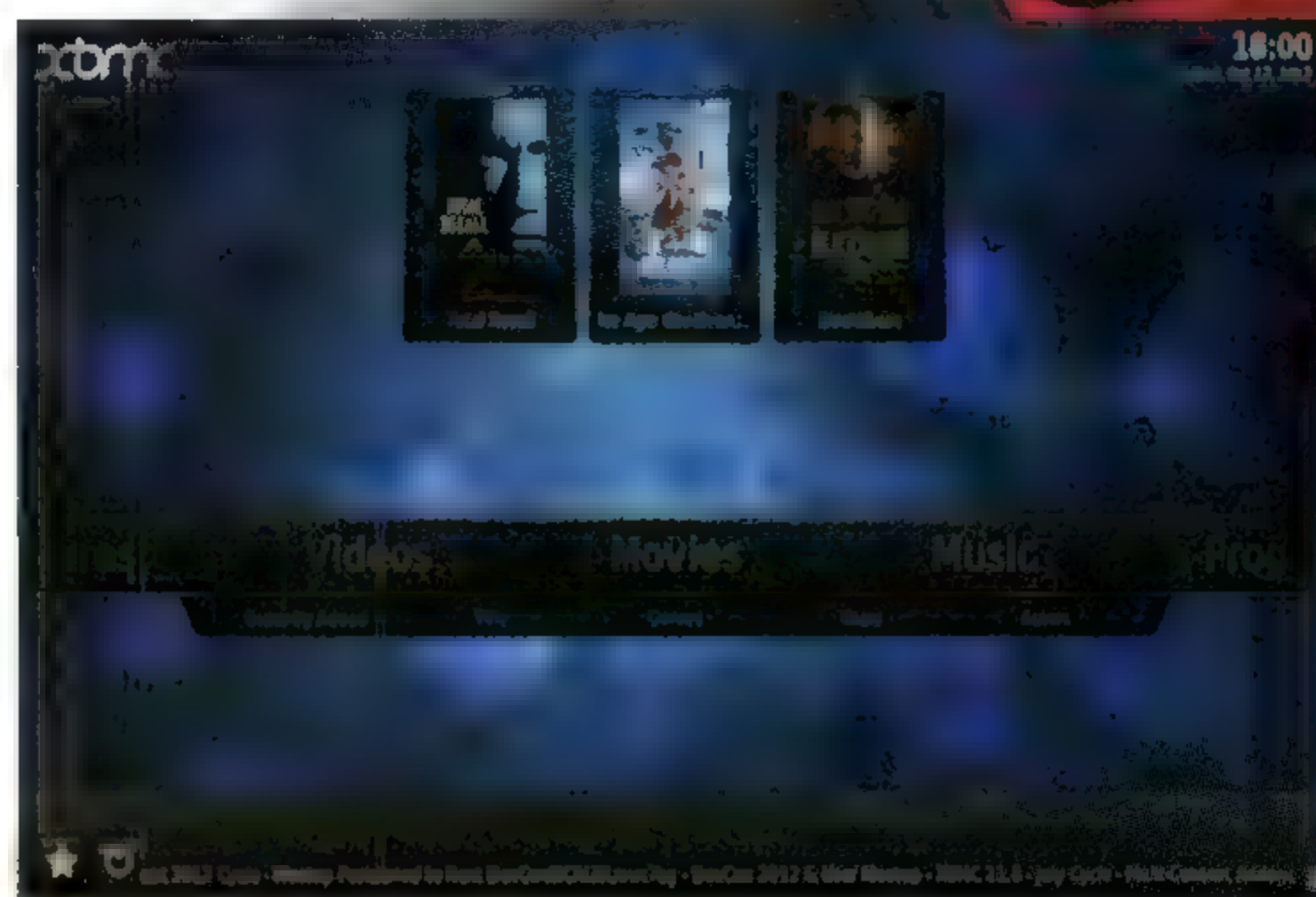


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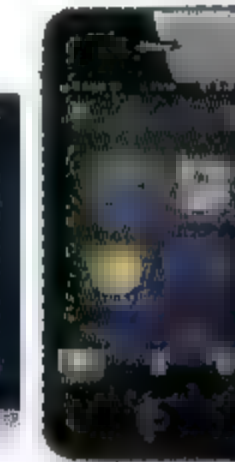
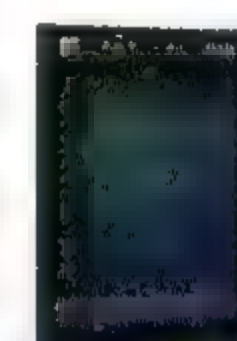
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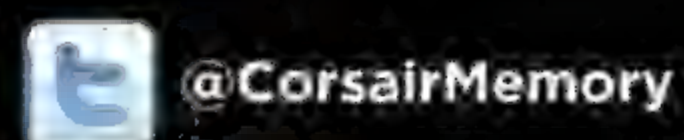
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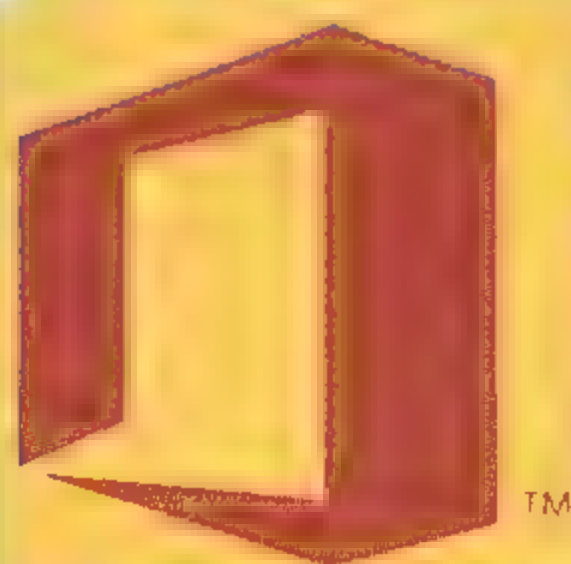
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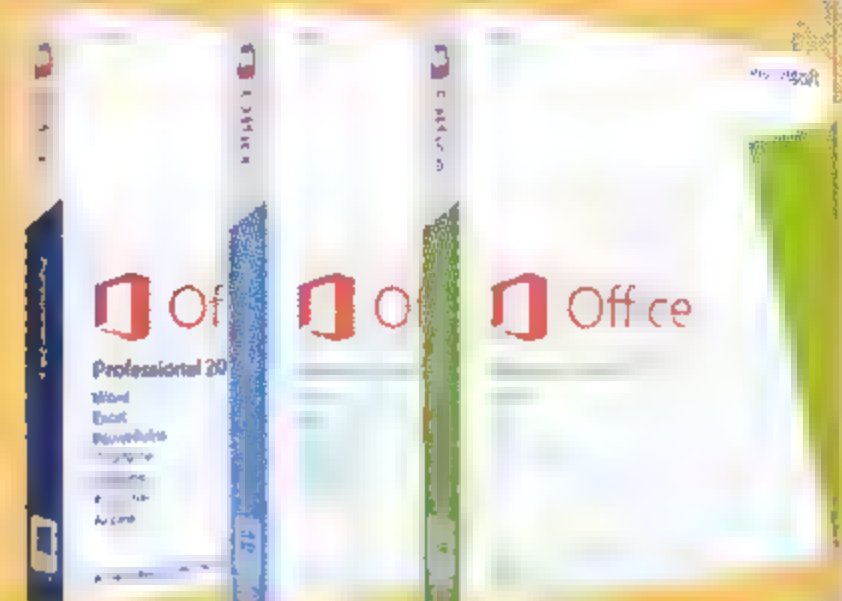


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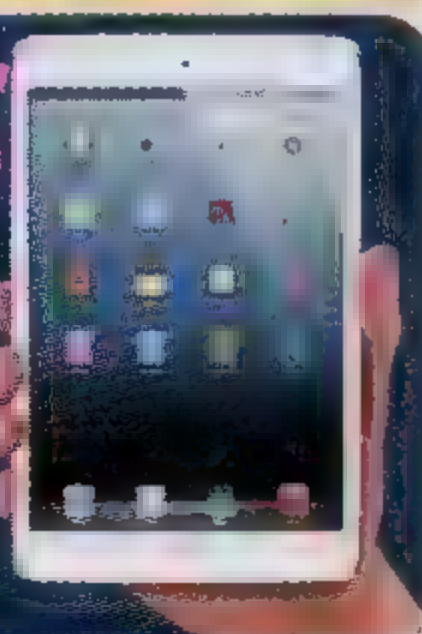
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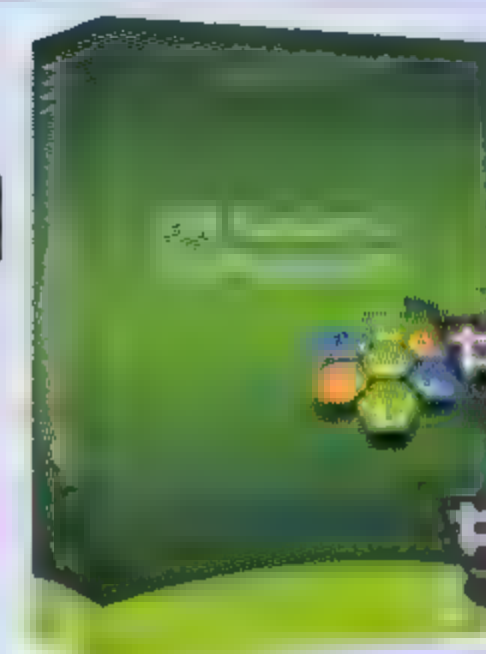
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# JON HONEYBALL is staggered by the tech on sale... in his local pub

“One of the advantages of living in a small, rural English community is that you have a village pub. I've made a wide range of friends through my local, The Royal Oak in Warboys, since I moved to the area three years ago. There are some real characters: Jimmy, 72, is a wily little chap – he knows everyone, and everyone knows him. Karen, Karen and Kelly, the three barmaids, are a delight. But it was another regular (left unnamed for reasons that will soon become clear) who sent my jaw plummeting towards the floor last night, and not because he'd ordered a large single malt on my tab.

This regular came into the pub waving a shiny Apple iPhone 4S box at me. “It was cheap, bought it from a mate in Peterborough just now,” he proudly boasted.

I'm somewhat notorious for having the latest phone toys with me at the bar, and he thought he'd impress me, having been rather taken aback when I came in last week toting an iPhone 5, a Samsung Galaxy S III, a Nokia Lumia 920 and an HTC Windows Phone 8X all at once.

I opened the box and peered inside. It was, indeed, a white iPhone 4S. Turning it on presented no problems – it booted with the correct Apple logos, and the homescreen looked fine. Something, however, wasn't right. The display stuttered and juddered in a most un-Apple-like fashion. Swiping left to right through the apps was slow. And what was this? An icon for Java? On an iPhone 4S? To misquote Pooh Bear, the more I looked the more

it was obvious that something was amiss.

The case was almost spot on. The glassware, screen, edges and switches all looked just like the real thing, except for a slight lack of precision in the machining. The interface was almost identical too: the apps jiggled when you held down an icon, and the Settings menu looked largely accurate. However, the wording on a few of the icons was wrong and the About menu threw up some surprises – the wrong version of the OS, and screen furniture that just wasn't right.

Then it hit me. This was a Chinese third-party clone, nothing to do with Apple. But the more I looked, the more amazed I was with the quality of this forgery. It's one thing to sell a hokey copy of Windows, complete with logos and security features – it's real Windows on the disc, but all the materials are fake. It's entirely another to make a fake phone, complete with OS and apps. It's forgery at a mind-boggling level.

My friend wasn't too happy when I told him that it was a fake. I actually showed my real iPhone 4S, and then the differences were obvious when you looked closely. He made a call back to the “supplier”, who claimed it was “legit”, but when told we were comparing it to a real 4S, he quickly offered a refund. My friend decided this wasn't really a good



idea. It transpired the vendor had a somewhat shady reputation, and the deal had been done on the street. So I decided to lessen his pain, and offered him a cash figure somewhat smaller than he'd paid for it. My friend is a good guy at heart, and wouldn't have wanted to sell on something that he knew to be dodgy. At least this way, he recouped some of his investment.

The next morning, in the lab, we started to look closely at the phoney 4S. Inserting a SIM worked, and when we plugged it in with an Apple USB cable, the device offered to mount itself as USB storage. This gave us access to the file system, and after some poking around and detective work, it was clear that this was a very clever reskinning of a base OS. I initially thought it might be Android or Linux, but it didn't look right. Obviously, iTunes wouldn't sync with the device, so installing apps was out of the question. A deeper dive showed that many of the apps were broken, or nothing more than shells. I couldn't get the browser to work at all.

**“The glassware, screen, edges and switches all looked just like a real iPhone, except for a slight lack of precision in the machining”**

Overall, I'm not surprised my friend was taken in. At first glance, even I thought it was the real deal. I'm left with a fascinating sample to gather dust on the shelves, but it's been a real jolt to the system. Fake Nokia phone batteries, fake Microsoft software, fake SD memory cards: all of these are well known and comprehensible. Going the whole hog to create a fake phone, OS, box and so forth is another level of effort. The rewards must be huge. Buyers beware.



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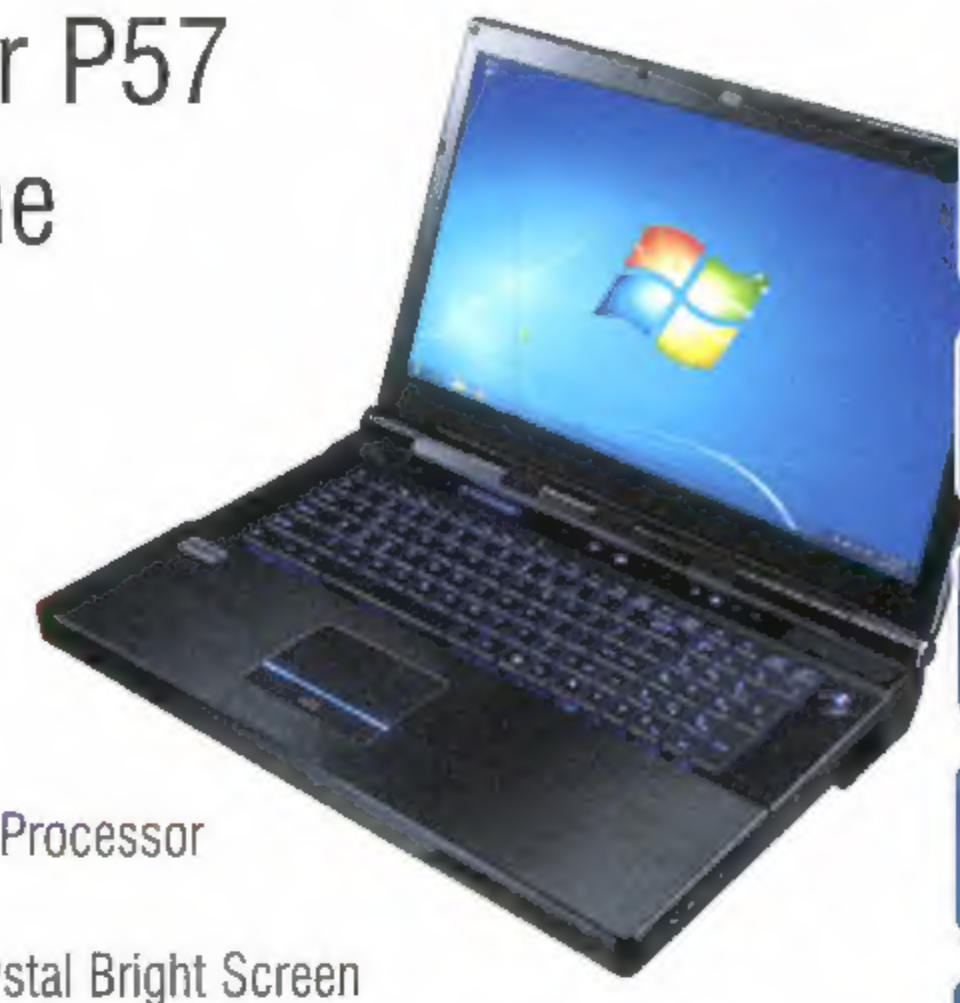
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